

77

## SEQUENCE LISTING

<110> Poustka, et al.

<120> PROTEIN (TP) THAT IS INVOLVED IN THE DEVELOPMENT OF THE NERVOUS SYSTEM

<130> 4121-129

<140> 09/914,549

<141> 2001-08-24

<150> PCT/DE00/00583

<151> 2000-02-28

<150> DE 199 08 423.8

<151> 1999-02-26

<160> 39

<170> PatentIn version 3.1

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acc cag caa gat atg cag tcc agt ctg gca gcc aga tat gca act cag	95
Thr Gln Gln Asp Met Gln Ser Ser Leu Ala Ala Arg Tyr Ala Thr Gln	
20 25 30	
tct aat cac agt gga att gca acc agt caa aaa aag cct act agg ctt	143
Ser Asn His Ser Gly Ile Ala Thr Ser Gln Lys Lys Pro Thr Arg Leu	
35 40 45	
cca ggg ccc tct agg gtg cct gct gca gga agc agc agc aag gtc cag	191
Pro Gly Pro Ser Arg Val Pro Ala Ala Gly Ser Ser Ser Lys Val Gln	
50 55 60	
gga gcc tct aat tta aat agg aga agt cag agc ttt aac agc att gac	239
Gly Ala Ser Asn Leu Asn Arg Arg Ser Gln Ser Phe Asn Ser Ile Asp	
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Lys	
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Asn His Ser Gly Ile Ala Thr Ser Gln Lys Lys Pro Thr Arg Leu Pro  
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Gly Pro Ser Arg Val Pro Ala Ala Gly Ser Ser Ser Lys Val Gln Gly  
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tct act ctc tca gaa aga tat acc cca tca tct cgg cag gcc aac caa 96  
Ser Thr Leu Ser Glu Arg Tyr Thr Pro Ser Ser Arg Gln Ala Asn Gln  
20 25 30

gaa gag ggc aaa gag tgg ttg cgt tct cat tct act gga ggg ctt cag 144  
Glu Glu Gly Lys Glu Trp Leu Arg Ser His Ser Thr Gly Gly Leu Gln  
35 40 45

gac act ggc aac cag  
Asp Thr Gly Asn Gln 159  
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Asp Thr Gly Asn Gln  
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 1 5 10 15

ctg aaa gca gag aat gac cga ctg aag gta gcc cca ggc ccc tca tca 97  
 Leu Lys Ala Glu Asn Asp Arg Leu Lys Val Ala Pro Gly Pro Ser Ser  
 20 25 30

ggc tcc act cca ggg cag gtc cct gga tca tct gca tta tct tcc cca 145  
 Gly Ser Thr Pro Gly Gln Val Pro Gly Ser Ser Ala Leu Ser Ser Pro  
 35 40 45

cgc cgc tcc cta ggc ctg gca ctc acc cat tcc ttc ggc ccc agt ctt 193  
 Arg Arg Ser Leu Gly Leu Ala Leu Thr His Ser Phe Gly Pro Ser Leu  
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gca gac aca gac ctg tca ccc atg gat ggc atc agt act tgt ggt cca 241  
 Ala Asp Thr Asp Leu Ser Pro Met Asp Gly Ile Ser Thr Cys Gly Pro  
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aag gag gaa gtg acc ctc cgg gtg gtg gtg agg atg ccc ccg cag cac 289  
 Lys Glu Glu Val Thr Leu Arg Val Val Val Arg Met Pro Pro Gln His  
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atc atc aaa ggg gac ttg aag cag cag gaa ttc ttc ctg ggc tgt agc 337  
 Ile Ile Lys Gly Asp Leu Lys Gln Gln Glu Phe Phe Leu Gly Cys Ser  
 100 105 110

aag gtc agt gga aaa gtt gac tgg aag atg ctg gat gaa gct gtt ttc 385  
 Lys Val Ser Gly Lys Val Asp Trp Lys Met Leu Asp Glu Ala Val Phe  
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caa gtg ttc aag gac tat att tct aaa atg gac cca gcc tct acc ctg 433  
 Gln Val Phe Lys Asp Tyr Ile Ser Lys Met Asp Pro Ala Ser Thr Leu  
 130 135 140

gga cta agc act gag tcc atc cat ggc tac agc atc agc cac gtg aaa	481
Gly Leu Ser Thr Glu Ser Ile His Gly Tyr Ser Ile Ser His Val Lys	
145 150 155 160	
cga gtg ttg gat gca gag ccc ccc gag atg cct cct tgc cgt cga ggt	529
Arg Val Leu Asp Ala Glu Pro Pro Glu Met Pro Pro Cys Arg Arg Gly	
165 170 175	
gtc aat aac ata tca gtc tcc ctc aaa ggt ctg aag gag aaa tgc gtc	577
Val Asn Asn Ile Ser Val Ser Leu Lys Gly Leu Lys Glu Lys Cys Val	
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gac agc ctg gtg ttc gag acg ctg atc ccc aag ccg atg atg cag cac	625
Asp Ser Leu Val Phe Glu Thr Leu Ile Pro Lys Pro Met Met Gln His	
195 200 205	
tac ata agc ctc ctg ctg aag cac cgg cgc ctc gtc ctc tcg ggc ccc	673
Tyr Ile Ser Leu Leu Leu Lys His Arg Arg Leu Val Leu Ser Gly Pro	
210 215 220	
agc ggc acg ggc aag acc tac ctg acc aat cgc ttg gcc gag tac ctg	721
Ser Gly Thr Gly Lys Thr Tyr Leu Thr Asn Arg Leu Ala Glu Tyr Leu	
225 230 235 240	
gtg gag cgc tct ggc cgt gag gtc aca gag ggc atc gtc agc acc ttc	769
Val Glu Arg Ser Gly Arg Glu Val Thr Glu Gly Ile Val Ser Thr Phe	
245 250 255	
aac atg cac cag cag tct tgc aag gat ctg caa ctg tat ctt tcc aac	817
Asn Met His Gln Gln Ser Cys Lys Asp Leu Gln Leu Tyr Leu Ser Asn	
260 265 270	
cta gcc aac cag ata gac cgg gaa aca gga att ggg gat gtg ccc ctg	865
Leu Ala Asn Gln Ile Asp Arg Glu Thr Gly Ile Gly Asp Val Pro Leu	
275 280 285	
gtg att cta ttg gat gac ctg agt gaa gca ggc tcc atc agt gag ttg	913
Val Ile Leu Leu Asp Asp Leu Ser Glu Ala Gly Ser Ile Ser Glu Leu	
290 295 300	
gtc aat ggg gcc ctc acc tgc aag tat cat aaa tgt ccc tat att ata	961
Val Asn Gly Ala Leu Thr Cys Lys Tyr His Lys Cys Pro Tyr Ile Ile	
305 310 315 320	
ggg acc acc aat cag cct gta aaa atg aca ccc aac cat ggc ttg cac	1009
Gly Thr Thr Asn Gln Pro Val Lys Met Thr Pro Asn His Gly Leu His	
325 330 335	
ttg agc ttc agg atg ttg acc ttc tcc aac aac gtg gag cca gcc aat	1057
Leu Ser Phe Arg Met Leu Thr Phe Ser Asn Asn Val Glu Pro Ala Asn	
340 345 350	
ggc ttc ctg gtt cgt tac ctg agg agg aag ctg gta gag tca gac agc	1105
Gly Phe Leu Val Arg Tyr Leu Arg Arg Lys Leu Val Glu Ser Asp Ser	
355 360 365	
gac atc aat gcc aac aag gaa gag ctg ctt cgg gtg ctc gac tgg gta	1153
Asp Ile Asn Ala Asn Lys Glu Glu Leu Leu Arg Val Leu Asp Trp Val	
370 375 380	
ccc aag ctg tgg tat cat ctc cac acc ttc ctt gag aag cac agc acc	1201



Pro Lys Leu Trp Tyr His Leu His Thr Phe Leu Glu Lys His Ser Thr	
385 390 395 400	
tca gac ttc ctc atc ggc cct tgc ttc ttt ctg tgc tgt ccc att ggc	1249
Ser Asp Phe Leu Ile Gly Pro Cys Phe Phe Leu Ser Cys Pro Ile Gly	
405 410 415	
att gag gac ttc cgg acc tgg ttc att gac ctg tgg aac aac tct atc	1297
Ile Glu Asp Phe Arg Thr Trp Phe Ile Asp Leu Trp Asn Asn Ser Ile	
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att ccc tat cta cag gaa gga gcc aag gat ggg ata aag gtc cat gga	1345
Ile Pro Tyr Leu Gln Glu Gly Ala Lys Asp Gly Ile Lys Val His Gly	
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cag aaa gct gct tgg gag gac cca gtg gaa tgg gtc cgg gac aca ctt	1393
Gln Lys Ala Ala Trp Glu Asp Pro Val Glu Trp Val Arg Asp Thr Leu	
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ccc tgg cca tca gcc caa caa gac caa tca aag ctg tac cac ctg ccc	1441
Pro Trp Pro Ser Ala Gln Gln Asp Gln Ser Lys Leu Tyr His Leu Pro	
465 470 475 480	
cca ccc acc gtg ggc cct cac agc att gcc tca cct ccc gag gat agg	1489
Pro Pro Thr Val Gly Pro His Ser Ile Ala Ser Pro Pro Glu Asp Arg	
485 490 495	
aca gtc aaa gac agc acc cca agt tct ctg gac tca gat cct ctg atg	1537
Thr Val Lys Asp Ser Thr Pro Ser Ser Leu Asp Ser Asp Pro Leu Met	
500 505 510	
gcc atg ctg ctg aaa ctt caa gaa gct gcc aac tac att gag tct cca	1585
Ala Met Leu Leu Lys Leu Gln Glu Ala Ala Asn Tyr Ile Glu Ser Pro	
515 520 525	
gat cga gaa acc atc ctg gac ccc aac ctt cag gca aca ctt	1627
Asp Arg Glu Thr Ile Leu Asp Pro Asn Leu Gln Ala Thr Leu	
530 535 540	
taagggttcg gcaatcactg tcacccccgg acagcagaac gctggcatca gctatcttag	1687
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aatggaaaag atgaagctgg agagagagga accagttgcc aaggtagaga gctgcccgt	2287

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Gly Ser Thr Pro Gly Gln Val Pro Gly Ser Ser Ala Leu Ser Ser Pro  
 35 40 45

Arg Arg Ser Leu Gly Leu Ala Leu Thr His Ser Phe Gly Pro Ser Leu  
 50 55 60

Ala Asp Thr Asp Leu Ser Pro Met Asp Gly Ile Ser Thr Cys Gly Pro  
 65 70 75 80

Lys Glu Glu Val Thr Leu Arg Val Val Val Arg Met Pro Pro Gln His  
 85 90 95

Ile Ile Lys Gly Asp Leu Lys Gln Gln Glu Phe Phe Leu Gly Cys Ser  
 100 105 110

Lys Val Ser Gly Lys Val Asp Trp Lys Met Leu Asp Glu Ala Val Phe  
 115 120 125

Gln Val Phe Lys Asp Tyr Ile Ser Lys Met Asp Pro Ala Ser Thr Leu  
 130 135 140

Gly Leu Ser Thr Glu Ser Ile His Gly Tyr Ser Ile Ser His Val Lys  
 145 150 155 160

Arg Val Leu Asp Ala Glu Pro Pro Glu Met Pro Pro Cys Arg Arg Gly  
 165 170 175

Val Asn Asn Ile Ser Val Ser Leu Lys Gly Leu Lys Glu Lys Cys Val  
 180 185 190

Asp Ser Leu Val Phe Glu Thr Leu Ile Pro Lys Pro Met Met Gln His  
195 200 205

Tyr Ile Ser Leu Leu Leu Lys His Arg Arg Leu Val Leu Ser Gly Pro  
210 215 220

Ser Gly Thr Gly Lys Thr Tyr Leu Thr Asn Arg Leu Ala Glu Tyr Leu  
225 230 235 240

Val Glu Arg Ser Gly Arg Glu Val Thr Glu Gly Ile Val Ser Thr Phe  
245 250 255

Asn Met His Gln Gln Ser Cys Lys Asp Leu Gln Leu Tyr Leu Ser Asn  
260 265 270

Leu Ala Asn Gln Ile Asp Arg Glu Thr Gly Ile Gly Asp Val Pro Leu  
275 280 285

Val Ile Leu Leu Asp Asp Leu Ser Glu Ala Gly Ser Ile Ser Glu Leu  
290 295 300

Val Asn Gly Ala Leu Thr Cys Lys Tyr His Lys Cys Pro Tyr Ile Ile  
305 310 315 320

Gly Thr Thr Asn Gln Pro Val Lys Met Thr Pro Asn His Gly Leu His  
325 330 335

Leu Ser Phe Arg Met Leu Thr Phe Ser Asn Asn Val Glu Pro Ala Asn  
340 345 350

Gly Phe Leu Val Arg Tyr Leu Arg Arg Lys Leu Val Glu Ser Asp Ser  
355 360 365

Asp Ile Asn Ala Asn Lys Glu Glu Leu Leu Arg Val Leu Asp Trp Val  
370 375 380

Pro Lys Leu Trp Tyr His Leu His Thr Phe Leu Glu Lys His Ser Thr  
385 390 395 400

Ser Asp Phe Leu Ile Gly Pro Cys Phe Phe Leu Ser Cys Pro Ile Gly  
405 410 415

Ile Glu Asp Phe Arg Thr Trp Phe Ile Asp Leu Trp Asn Asn Ser Ile  
420 425 430

Ile Pro Tyr Leu Gln Glu Gly Ala Lys Asp Gly Ile Lys Val His Gly  
 435 440 445

Gln Lys Ala Ala Trp Glu Asp Pro Val Glu Trp Val Arg Asp Thr Leu  
 450 455 460

Pro Trp Pro Ser Ala Gln Gln Asp Gln Ser Lys Leu Tyr His Leu Pro  
 465 470 475 480

Pro Pro Thr Val Gly Pro His Ser Ile Ala Ser Pro Pro Glu Asp Arg  
 485 490 495

Thr Val Lys Asp Ser Thr Pro Ser Ser Leu Asp Ser Asp Pro Leu Met  
 500 505 510

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ctc aac tct gcc cac cag ctg gac cag ctt cgg gag acc atg cac aat	96
Leu Asn Ser Ala His Gln Leu Asp Gln Leu Arg Glu Thr Met His Asn	
20 25 30	
atg cag ttg gag gtg gac ctg ctg aaa gca gag aat gac cgg ctg aag	144
Met Gln Leu Glu Val Asp Leu Leu Lys Ala Glu Asn Asp Arg Leu Lys	
35 40 45	
gtt gcc ccc ggc ccc tcc tca ggc tgc act cca ggg cag gtc cct ggg	192
Val Ala Pro Gly Pro Ser Ser Gly Cys Thr Pro Gly Gln Val Pro Gly	
50 55 60	
tca tcg gct ctg tcg tcc cct cga cgt tcc ctg ggc ctt gca ctc agc	240
Ser Ser Ala Leu Ser Ser Pro Arg Arg Ser Leu Gly Leu Ala Leu Ser	
65 70 75 80	
cat cct ttc agt cct agt ctc aca gac aca gac ctc tca ccc atg gat	288
His Pro Phe Ser Pro Ser Leu Thr Asp Thr Asp Leu Ser Pro Met Asp	

85

90

95

ggc atc agc acc tgt ggt tca aag gaa gag gtg acc ctg cgg gtg gtg Gly Ile Ser Thr Cys Gly Ser Lys Glu Glu Val Thr Leu Arg Val Val	336
100 105 110	
gtc cgg atg ccg ccc cag cac atc atc aaa ggg gac tta aag cag cag Val Arg Met Pro Pro Gln His Ile Ile Lys Gly Asp Leu Lys Gln Gln	384
115 120 125	
gag ttc ttc ctg ggt tgc agc aag gtc agt ggc aaa gtt gac tgg aag Glu Phe Phe Leu Gly Cys Ser Lys Val Ser Gly Lys Val Asp Trp Lys	432
130 135 140	
atg ctg gat gaa gcc gtt ttc caa gtg ttc aag gac tac att tct aaa Met Leu Asp Glu Ala Val Phe Gln Val Phe Lys Asp Tyr Ile Ser Lys	480
145 150 155 160	
atg gac cca gcc tca acc ctg gga ctg agc act gag tcc ata cat ggc Met Asp Pro Ala Ser Thr Leu Gly Leu Ser Thr Glu Ser Ile His Gly	528
165 170 175	
tat agc ctc agc cac gtg aaa cga gtg ctg gat gct gag ccc cca gag Tyr Ser Leu Ser His Val Lys Arg Val Leu Asp Ala Glu Pro Pro Glu	576
180 185 190	
atg cct cct tgc cgc cga ggt gtc aat aac ata tca gtc gct ctc aaa Met Pro Pro Cys Arg Arg Gly Val Asn Asn Ile Ser Val Ala Leu Lys	624
195 200 205	
ggg ctg aaa gag aag tgt gtc gac agc ctg gtg ttc gag acg ctt atc Gly Leu Lys Glu Lys Cys Val Asp Ser Leu Val Phe Glu Thr Leu Ile	672
210 215 220	
ccc aag ccc atg atg cag cac tac atc agc ctc ctg ctc aag cac cgg Pro Lys Pro Met Met Gln His Tyr Ile Ser Leu Leu Leu Lys His Arg	720
225 230 235 240	
cgc ctg gtg ctc tcc ggc ccc agt ggc acc ggc aag acc tac ttg acc Arg Leu Val Leu Ser Gly Pro Ser Gly Thr Gly Lys Thr Tyr Leu Thr	768
245 250 255	
aat cgg cta gcc gag tac ctg gtg gag cgc tcc ggc cgc gag gtc acg Asn Arg Leu Ala Glu Tyr Leu Val Glu Arg Ser Gly Arg Glu Val Thr	816
260 265 270	
gat ggc atc gtc agc act ttc aac atg cac cag cag tct tgc aag gat Asp Gly Ile Val Ser Thr Phe Asn Met His Gln Gln Ser Cys Lys Asp	864
275 280 285	
ctg caa ctg tac ctc tcc aac cta gcc aac cag ata gac cgg gaa aca Leu Gln Leu Tyr Leu Ser Asn Leu Ala Asn Gln Ile Asp Arg Glu Thr	912
290 295 300	
ggg ata ggg gat gtg ccc ttg gtg atc ctc ctg gat gat ctg agt gaa Gly Ile Gly Asp Val Pro Leu Val Ile Leu Leu Asp Asp Leu Ser Glu	960
305 310 315 320	
gca ggc tcc atc agt gag ctg gtc aat ggg gcc ctc acc tgc aag tat Ala Gly Ser Ile Ser Glu Leu Val Asn Gly Ala Leu Thr Cys Lys Tyr	1008
325 330 335	

cac aaa tgt ccc tac att ata ggt acc acc aat cag cct gta aaa atg His Lys Cys Pro Tyr Ile Ile Gly Thr Thr Asn Gln Pro Val Lys Met 340 345 350	1056
aca ccc aac cat ggc ttg cac ttg agc ttc agg atg ctg acc ttc tcg Thr Pro Asn His Gly Leu His Leu Ser Phe Arg Met Leu Thr Phe Ser 355 360 365	1104
aac aat gtg gaa cca gcc aat ggc ttt ctg gtc cgt tac ctg cgg agg Asn Asn Val Glu Pro Ala Asn Gly Phe Leu Val Arg Tyr Leu Arg Arg 370 375 380	1152
aag ttg gta gag tca gac agt gac gtc aat gct aac aag gaa gag ctg Lys Leu Val Glu Ser Asp Ser Asp Val Asn Ala Asn Lys Glu Leu 385 390 395 400	1200
ctt cgg gtg ctg gac tgg gtg ccc aag ctg tgg tat cac ctc cac acc Leu Arg Val Leu Asp Trp Val Pro Lys Leu Trp Tyr His Leu His Thr 405 410 415	1248
ttc ctg gag aag cac agc acc tcg gac ttc ctc att ggc cct tgc ttc Phe Leu Glu Lys His Ser Thr Ser Asp Phe Leu Ile Gly Pro Cys Phe 420 425 430	1296
ttc ctg tcc tgt ccc att ggc atc gag gac ttc cgg acc tgg ttc att Phe Leu Ser Cys Pro Ile Gly Ile Glu Asp Phe Arg Thr Trp Phe Ile 435 440 445	1344
gac ctg tgg aac aat tcc atc atc ccc tat cta cag gaa gga gcc aag Asp Leu Trp Asn Asn Ser Ile Ile Pro Tyr Leu Gln Glu Gly Ala Lys 450 455 460	1392
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gaa tgg gtc cga gac act ctt ccc tgg ccg tcg gcc caa caa gac caa Glu Trp Val Arg Asp Thr Leu Pro Trp Pro Ser Ala Gln Gln Asp Gln 485 490 495	1488
tca aag ctc tac cac ctg ccc ccg cct tct gtg ggc ccc cac agc act Ser Lys Leu Tyr His Leu Pro Pro Pro Ser Val Gly Pro His Ser Thr 500 505 510	1536
gcc tca ccc ccg gag gac agg aca gtc aaa gac agc act cca aac tcc Ala Ser Pro Pro Glu Asp Arg Thr Val Lys Asp Ser Thr Pro Asn Ser 515 520 525	1584
ctc gac tca gat ccc ctg atg gcc atg cta ctg aaa ctc caa gaa gct Leu Asp Ser Asp Pro Leu Met Ala Met Leu Leu Lys Leu Gln Glu Ala 530 535 540	1632
gcc aac tac att gag tca cca gat cga gag act atc ctg gac ccc aac Ala Asn Tyr Ile Glu Ser Pro Asp Arg Glu Thr Ile Leu Asp Pro Asn 545 550 555 560	1680
ctc cag gcg aca ctc tgagggcccg gcagtcactg tcaccctgga gggcagaagg Leu Gln Ala Thr Leu 565	1735

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Met Gln Leu Glu Val Asp Leu Leu Lys Ala Glu Asn Asp Arg Leu Lys  
 35 40 45

Val Ala Pro Gly Pro Ser Ser Gly Cys Thr Pro Gly Gln Val Pro Gly  
 50 55 60

Ser Ser Ala Leu Ser Ser Pro Arg Arg Ser Leu Gly Leu Ala Leu Ser  
 65 70 75 80

His Pro Phe Ser Pro Ser Leu Thr Asp Thr Asp Leu Ser Pro Met Asp  
 85 90 95

Gly Ile Ser Thr Cys Gly Ser Lys Glu Glu Val Thr Leu Arg Val Val

100

105

110

Val Arg Met Pro Pro Gln His Ile Ile Lys Gly Asp Leu Lys Gln Gln  
 115 120 125

Glu Phe Phe Leu Gly Cys Ser Lys Val Ser Gly Lys Val Asp Trp Lys  
 130 135 140

Met Leu Asp Glu Ala Val Phe Gln Val Phe Lys Asp Tyr Ile Ser Lys  
 145 150 155 160

Met Asp Pro Ala Ser Thr Leu Gly Leu Ser Thr Glu Ser Ile His Gly  
 165 170 175

Tyr Ser Leu Ser His Val Lys Arg Val Leu Asp Ala Glu Pro Pro Glu  
 180 185 190

Met Pro Pro Cys Arg Arg Gly Val Asn Asn Ile Ser Val Ala Leu Lys  
 195 200 205

Gly Leu Lys Glu Lys Cys Val Asp Ser Leu Val Phe Glu Thr Leu Ile  
 210 215 220

Pro Lys Pro Met Met Gln His Tyr Ile Ser Leu Leu Leu Lys His Arg  
 225 230 235 240

Arg Leu Val Leu Ser Gly Pro Ser Gly Thr Gly Lys Thr Tyr Leu Thr  
 245 250 255

Asn Arg Leu Ala Glu Tyr Leu Val Glu Arg Ser Gly Arg Glu Val Thr  
 260 265 270

Asp Gly Ile Val Ser Thr Phe Asn Met His Gln Gln Ser Cys Lys Asp  
 275 280 285

Leu Gln Leu Tyr Leu Ser Asn Leu Ala Asn Gln Ile Asp Arg Glu Thr  
 290 295 300

Gly Ile Gly Asp Val Pro Leu Val Ile Leu Leu Asp Asp Leu Ser Glu  
 305 310 315 320

Ala Gly Ser Ile Ser Glu Leu Val Asn Gly Ala Leu Thr Cys Lys Tyr  
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His Lys Cys Pro Tyr Ile Ile Gly Thr Thr Asn Gln Pro Val Lys Met  
 340 345 350



Thr Pro Asn His Gly Leu His Leu Ser Phe Arg Met Leu Thr Phe Ser  
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Asn Asn Val Glu Pro Ala Asn Gly Phe Leu Val Arg Tyr Leu Arg Arg  
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Lys Leu Val Glu Ser Asp Ser Asp Val Asn Ala Asn Lys Glu Glu Leu  
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Leu Arg Val Leu Asp Trp Val Pro Lys Leu Trp Tyr His Leu His Thr  
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Phe Leu Ser Cys Pro Ile Gly Ile Glu Asp Phe Arg Thr Trp Phe Ile  
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Asp Leu Trp Asn Asn Ser Ile Ile Pro Tyr Leu Gln Glu Gly Ala Lys  
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Asp Gly Ile Lys Val His Gly Gln Lys Ala Ala Trp Glu Asp Pro Val  
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Glu Trp Val Arg Asp Thr Leu Pro Trp Pro Ser Ala Gln Gln Asp Gln  
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Ser Lys Leu Tyr His Leu Pro Pro Pro Ser Val Gly Pro His Ser Thr  
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Ala Ser Pro Pro Glu Asp Arg Thr Val Lys Asp Ser Thr Pro Asn Ser  
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Leu Asp Ser Asp Pro Leu Met Ala Met Leu Leu Lys Leu Gln Glu Ala  
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Ala	Asp	Ala	Lys	Lys	Lys	Lys	Lys	Lys	Ser	Trp			
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 Ile Lys Asp Leu Gln Gln Asp Ile Ala Asp Gly Val Leu Leu Ala Glu  
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Ile	Arg	Asn	Gly	Asn	Leu	Lys	Ala	Ile	Leu	Gly	Leu	Phe	Phe	Ser	Leu	
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Pro	Ser	Arg	Phe	Met	Tyr	Thr	Thr	Pro	Leu	Arg	Arg	Ala	Ala	Val	Ser	
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Arg	Leu	Gly	Asn	Met	Ser	Gln	Ile	Asp	Met	Ser	Glu	Lys	Ala	Ser	Ser	

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Ile	Pro	Asp	Thr	Ala	Thr	Ser	Arg	Asp	Ile	Ile	Gln	Arg	Gly	Val	His															
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Pro	Ser	Ser	His	Ser	Asp	Ile	Glu	Glu	Leu	Thr	Asp	Ser	Ser	Leu		
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Pro	Ala	Ser	Pro	Lys	Leu	Pro	His	Asn	Ala	Gly	Asp	Cys	Gly	Ser		
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atg cag aat Met Gln Asn 1350	gaa att gaa ata ctg Glu Ile Glu Ile Leu 1355	aaa gct gaa aat gac Lys Ala Glu Asn Asp 1360	cgg ttg Arg Leu 4588
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Tyr Leu Ala Lys Ser Gly His Lys Arg Leu Ile Lys Asp Leu Gln Gln  
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Asp Ile Ala Asp Gly Val Leu Leu Ala Glu Ile Ile Gln Ile Ile Ala  
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Asn Glu Lys Val Glu Asp Ile Asn Gly Cys Pro Arg Ser Gln Ser Gln  
65 70 75 80

Met Ile Glu Asn Val Asp Val Cys Leu Ser Phe Leu Ala Ala Arg Gly  
85 90 95

Val Asn Val Gln Gly Leu Ser Ala Glu Glu Ile Arg Asn Gly Asn Leu  
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Lys Ala Ile Leu Gly Leu Phe Phe Ser Leu Ser Arg Tyr Lys Gln Gln  
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Gln His His Gln Gln Gln Tyr Tyr Gln Ser Leu Val Glu Leu Gln Gln  
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Arg Val Thr His Ala Ser Pro Pro Ser Glu Ala Ser Gln Ala Lys Thr  
145 150 155 160

Gln Gln Asp Met Gln Ser Arg Leu Pro Gly Pro Ser Arg Val Pro Ala  
165 170 175

Ala Gly Ser Ser Ser Lys Val Gln Gly Ala Ser Asn Leu Asn Arg Arg  
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Ser Gln Ser Phe Asn Ser Ile Asp Lys Asn Lys Pro Pro Asn Tyr Ala  
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Asn Gly Asn Glu Lys Gly Glu Asp Pro Glu Thr Arg Arg Met Arg Thr  
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Val Lys Asn Ile Ala Asp Leu Arg Gln Asn Leu Glu Glu Thr Met Ser  
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Ser Leu Arg Gly Thr Gln Ile Ser His Ser Thr Leu Glu Thr Thr Phe  
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Asp Ser Thr Val Thr Thr Glu Val Asn Gly Arg Thr Ile Pro Asn Leu  
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Thr Ser Arg Pro Thr Pro Met Thr Trp Arg Leu Gly Gln Ala Cys Pro  
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Arg Leu Gln Ala Gly Asp Ala Pro Ser Leu Gly Ala Gly Tyr Pro Arg  
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Thr Thr Pro Leu Arg Arg Ala Ala Val Ser Arg Leu Gly Asn Met Ser  
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Gln Ile Asp Met Ser Glu Lys Ala Ser Ser Asp Leu Asp Met Ser Ser  
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Asp Ser Trp Asp Asp Ser Ser Ser Val Ser Ser Gly Leu Ser Asp Thr  
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Pro Gly Arg Gly Gly His Arg Ser Ser Thr Ser Ser Ile Asp Ser Asn

690

695

700

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Gly Gly Leu Val Trp Ala Ala Asn Met Ser Ser Ser Ser Ala Gly Ser  
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Lys Asp Thr Pro Ser Tyr Gln Ser Met Thr Ser Leu His Thr Ser Ser  
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Glu Ser Ile Asp Leu Pro Leu Ser His His Gly Ser Leu Ser Gly Leu  
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930 935 940



Val Arg Ser Thr Leu Ser Glu Ser Met Gln Leu Asp Arg Asn Thr Leu  
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His Gly Ser Ser Leu Ser Leu Val Ser Ser Thr Ser Ser Leu Tyr  
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Leu Asn	Ile Thr	Glu Ala	Val	Ser Ser	Asp Ile	Leu	Leu Asp	Asp	
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Pro Ser Arg Lys Asn Thr Gln Leu Lys Thr Asp Ala Glu Lys Arg Ser  
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Thr Thr Asp Glu Thr Trp Asp Ser Pro Glu Glu Leu Lys Lys Ala Glu  
225 230 235 240

Gly Asp Cys Asp Ser His Gly Asp Gly Ala Ala Lys Trp Lys Gly Ala  
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Thr Ser Gly Leu Ala Glu Asp Ser Glu Lys Thr Gly Gln Lys Ala Ser  
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Gly Gly Thr Pro Ala Thr Ala Arg Gln Lys Thr Ser Thr Ser Ala Leu  
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Lys Thr Pro Gly Lys Thr Asp Asp Ala Lys Ala Ser Glu Lys Gly Lys  
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Lys Ser Ser Gly Asp Glu Gly Lys Lys Pro Pro Ser Gly Ile Gly Arg  
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Ser Thr Ala Ser Ser Ser Phe Gly Tyr Lys Lys Pro Ser Gly Val Gly  
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Ala Ser Thr Met Ile Thr Ser Ser Gly Ala Thr Ile Thr Ser Gly Ser  
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Ala Thr Leu Gly Lys Ile Pro Lys Ser Ala Ala Ile Gly Gly Lys Ser  
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Asn Ala Gly Arg Lys Thr Ser Leu Asp Gly Ser Gln Asn Gln Asp Asp  
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Val Val Leu His Val Ser Ser Lys Thr Thr Leu Gln Tyr Arg Ser Leu  
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Pro Arg Pro Ser Lys Ser Ser Thr Ser Gly Ile Pro Gly Arg Gly Gly  
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His Arg Ser Ser Thr Ser Ser Ile Asp Ser Asn Val Ser Ser Lys Ser  
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Gly Arg Ser Ser Pro Val Thr Val Asn Gln Thr Asp Lys Glu Lys Glu  
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Pro Ser Asp Leu Thr Thr Asp Val Ile Ser Leu Ser His Ser Leu Ala  
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Ser Ser Pro Ala Ser Val His Ser Phe Thr Ser Gly Gly Leu Val Trp  
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Ala Ala Asn Leu Ser Ser Ser Ser Ala Gly Ser Lys Asp Thr Pro Ser  
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Tyr Gln Ser Met Thr Ser Leu His Thr Ser Ser Glu Ser Ile Asp Leu  
660 665 670

Pro Leu Ser His His Gly Ser Leu Ser Gly Leu Thr Thr Gly Thr His  
675 680 685

Glu Val Gln Ser Leu Leu Met Arg Thr Gly Ser Val Arg Ser Thr Leu  
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Ser Glu Arg Tyr Thr Pro Ser Ser Arg Gln Ala Asn Gln Glu Glu Gly  
705 710 715 720

Lys Glu Trp Leu Arg Ser His Ser Thr Gly Gly Leu Gln Asp Thr Gly  
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Asn Gln Ser Pro Leu Val Ser Pro Ser Ala Met Ser Ser Ser Ala Thr  
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Gly Lys Tyr His Phe Ser Asn Leu Val Ser Pro Thr Asn Leu Ser Gln  
755 760 765

Phe Asn Leu Pro Ala Pro Ser Met Met Arg Ser Ser Ser Ile Pro Ala  
770 775 780

Gln Asp Ser Ser Phe Asp Leu Tyr Asp Asp Ala Gln Leu Cys Gly Ser  
785 790 795 800

Ala Thr Ser Leu Glu Glu Arg Pro Arg Ala Val Ser His Ser Gly Ser  
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Phe Arg Asp Ser Met Glu Glu Val His Gly Ser Ser Leu Ser Leu Val  
820 825 830

Ser Ser Thr Ser Ser Leu Tyr Ser Thr Ala Glu Glu Lys Ala His Ser  
835 840 845

Glu Gln Ile His Lys Leu Arg Arg Glu Leu Val Ala Ser Gln Glu Lys  
850 855 860

Val Ala Thr Leu Thr Ser Gln Leu Ser Ala Asn Ala His Leu Val Ala  
865 870 875 880

Ala Phe Glu Lys Ser Leu Gly Asn Met Thr Gly Arg Leu Gln Ser Leu  
885 890 895

Thr Met Thr Ala Glu Gln Lys Glu Ser Glu Leu Ile Glu Leu Arg Glu  
900 905 910

Thr Ile Glu Met Leu Lys Ala Gln Asn Ser Ala Ala Gln Ala Ala Ile  
915 920 925

Gln Gly Ala Leu Asn Gly Pro Asp His Pro Pro Lys Asp Leu Arg Ile  
930 935 940

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48

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96

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144

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192

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Val Leu Ser Leu Pro Leu Leu Leu Pro Arg Leu Leu Leu Leu Arg Ser  
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240

cgc ccc ctg ccc cct ccc ccc gtg cct gca gac gcg cgg atc gtc cat  
Arg Pro Leu Pro Pro Pro Pro Val Pro Ala Asp Ala Arg Ile Val His  
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288

gcg ctc ctc gcg ggc aga atg ctg ggc agc agc gtc aag agc gtg cag  
Ala Leu Leu Ala Gly Arg Met Leu Gly Ser Ser Val Lys Ser Val Gln  
100 105 110

336

ccc gag gtg gag ctg agc agc ggc ggc ggc gac gag ggc gcg gac gaa  
Pro Glu Val Glu Leu Ser Ser Gly Gly Gly Asp Glu Gly Ala Asp Glu  
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384

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432

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Leu	Pro	Lys	Arg	Ala	Lys	Ala	Pro	Gly	Gly	Gly	Gly	Gly	Gly	Met	Ala	Lys	
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gcc	agc	gcg	gct	gag	ctg	aag	gtc	ttc	aag	tcc	ggc	agc	gtg	gac	agc		528
Ala	Ser	Ala	Ala	Glu	Leu	Lys	Val	Phe	Lys	Ser	Gly	Ser	Val	Asp	Ser		
				165					170					175			
cgt	gtc	ccc	ggc	ggg	ccg	ccc	gcc	tcc	aac	ctg	cgc	aag	cag	aag	tca		576
Arg	Val	Pro	Gly	Gly	Pro	Pro	Ala	Ser	Asn	Leu	Arg	Lys	Gln	Lys	Ser		
			180					185					190				
ctc	acc	aac	ctc	tct	ttt	ctc	acg	gac	tcc	gag	aaa	aag	ctg	cag	ctt		624
Leu	Thr	Asn	Leu	Ser	Phe	Leu	Thr	Asp	Ser	Glu	Lys	Lys	Leu	Gln	Leu		
		195					200					205					
tat	gag	ccc	gaa	tgg	agc	gac	gat	atg	gcc	aag	gcg	ccc	aaa	ggc	tta		672
Tyr	Glu	Pro	Glu	Trp	Ser	Asp	Asp	Met	Ala	Lys	Ala	Pro	Lys	Gly	Leu		
	210					215					220						
ggc	aag	gtg	ggg	tcc	aag	ggc	cgt	gaa	gct	ccg	ctg	atg	tcc	aag	acg		720
Gly	Lys	Val	Gly	Ser	Lys	Gly	Arg	Glu	Ala	Pro	Leu	Met	Ser	Lys	Thr		
225					230					235					240		
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Leu	Ser	Lys	Ser	Glu	His	Ser	Leu	Phe	Gln	Ala	Lys	Gly	Ser	Pro	Ala		
				245					250					255			
ggc	ggc	gcc	aag	acc	ccc	ctg	gct	ccg	ctc	gcg	ccc	aac	ctg	gga	aag		816
Gly	Gly	Ala	Lys	Thr	Pro	Leu	Ala	Pro	Leu	Ala	Pro	Asn	Leu	Gly	Lys		
			260					265					270				
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Pro	Ser	Arg	Ile	Pro	Arg	Gly	Pro	Tyr	Ala	Glu	Val	Lys	Pro	Leu	Ser		
		275					280					285					
aag	gcg	cct	gaa	gcg	gcc	gtg	agc	gaa	gat	ggc	aaa	tcg	gac	gac	gag		912
Lys	Ala	Pro	Glu	Ala	Ala	Val	Ser	Glu	Asp	Gly	Lys	Ser	Asp	Asp	Glu		
	290					295					300						
ctg	ctc	tcc	agc	aag	gcc	aag	gcg	caa	aag	agc	tct	ggg	cct	gtc	ccc		960
Leu	Leu	Ser	Ser	Lys	Ala	Lys	Ala	Gln	Lys	Ser	Ser	Gly	Pro	Val	Pro		
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tct	gcc	aag	ggc	cag	gag	gag	cgc	gcc	ttc	ctc	aag	gtg	gac	ccc	gag		1008
Ser	Ala	Lys	Gly	Gln	Glu	Glu	Arg	Ala	Phe	Leu	Lys	Val	Asp	Pro	Glu		
				325					330					335			
ctg	gtg	gtg	acc	gtg	ctg	gga	gac	ctg	gag	cag	ctg	ctc	ttc	agc	cag		1056
Leu	Val	Val	Thr	Val	Leu	Gly	Asp	Leu	Glu	Gln	Leu	Leu	Phe	Ser	Gln		
			340					345					350				
atg	ctg	gac	cca	gag	tcc	cag	aga	aag	agg	aca	gtg	cag	aat	gtc	ctg		1104
Met	Leu	Asp	Pro	Glu	Ser	Gln	Arg	Lys	Arg	Thr	Val	Gln	Asn	Val	Leu		
		355					360					365					
gat	ctc	cgg	cag	aac	ctg	gaa	gag	acc	atg	tcc	agc	ctg	cga	ggg	tcc		1152
Asp	Leu	Arg	Gln	Asn	Leu	Glu	Glu	Thr	Met	Ser	Ser	Leu	Arg	Gly	Ser		

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Gln Val Thr His Ser Ser Leu Glu Met Thr Cys Tyr Asp Ser Asp Asp			
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Ala Asn Pro Arg Ser Val Ser Ser Leu Ser Asn Arg Ser Tyr Pro Leu			
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tca tgg cgc tat ggc cag tcc agt ccg cgg ctg cag gct ggt gac gcg			1296
Ser Trp Arg Tyr Gly Gln Ser Ser Pro Arg Leu Gln Ala Gly Asp Ala			
	420	425	430
ccc tct gtg ggt ggg agc tgc cgc tcg gag ggg acg ccc gcc tgg tac			1344
Pro Ser Val Gly Gly Ser Cys Arg Ser Glu Gly Thr Pro Ala Trp Tyr			
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Met His Gly Glu Arg Ala His Tyr Ser His Thr Met Pro Met Arg Ser			
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Pro Ser Lys Leu Ser His Ile Ser Arg Leu Glu Leu Val Glu Ser Leu			
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Asp Ser Asp Glu Val Asp Leu Lys Ser Gly Tyr Met Ser Asp Ser Asp			
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ctc atg ggc aag acc atg acg gag gat gat gac atc act acc ggc tgg			1536
Leu Met Gly Lys Thr Met Thr Glu Asp Asp Asp Ile Thr Thr Gly Trp			
	500	505	510
gat gaa agc agc tcc atc agt agt gga ctc agc gat gcc tca gac aat			1584
Asp Glu Ser Ser Ser Ile Ser Ser Gly Leu Ser Asp Ala Ser Asp Asn			
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Leu Ser Ser Glu Glu Phe Asn Ala Ser Ser Ser Leu Asn Ser Leu Pro			
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Leu Lys Met Glu Pro Gly Thr Ser Lys Trp Arg Arg Glu Arg Pro Glu			
	595	600	605
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Ser Cys Asp Asp Ser Ser Lys Gly Gly Glu Leu Lys Lys Pro Ile Ser			
	610	615	620

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ggc tcc caa atg ggg agc acc	ctg tcc ctg gcc gag	aga ccc aag	3429
Gly Ser Gln Met Gly Ser Thr	Leu Ser Leu Ala Glu	Arg Pro Lys	
1130	1135	1140	
gga atg att cgg tca gga tcc	ttc cga gac ccc acg	gac gat gtt	3474
Gly Met Ile Arg Ser Gly Ser	Phe Arg Asp Pro Thr	Asp Asp Val	
1145	1150	1155	
cac ggc tca gtg ctg tcc ctg	gcc tcc agt gcc tcc	tcc acc tac	3519
His Gly Ser Val Leu Ser Leu	Ala Ser Ser Ala Ser	Ser Thr Tyr	
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Ser Ser Ala Glu Glu Arg Met	Gln Ser Glu Gln Ile	Arg Lys Leu	
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cgt agg gaa ctg gaa tca tcc	cag gaa aaa gtg gcc	acc ttg acg	3609
Arg Arg Glu Leu Glu Ser Ser	Gln Glu Lys Val Ala	Thr Leu Thr	
1190	1195	1200	
tct cag ctt tct gcc aat gct	aat ctg gtg gct gct	ttt gag cag	3654
Ser Gln Leu Ser Ala Asn Ala	Asn Leu Val Ala Ala	Phe Glu Gln	
1205	1210	1215	
agc ctg gtg aat atg aca tcc	cgc ctg cga cac ctg	gca gag acg	3699
Ser Leu Val Asn Met Thr Ser	Arg Leu Arg His Leu	Ala Glu Thr	
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gcc gag gag aag gac act gag	ctg ctg gat ttg cga	gaa acc ata	3744
Ala Glu Glu Lys Asp Thr Glu	Leu Leu Asp Leu Arg	Glu Thr Ile	
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gac ttt ctg aag aaa aag aac	tct gag gcc cag gca	gtc att cag	3789
Asp Phe Leu Lys Lys Lys Asn	Ser Glu Ala Gln Ala	Val Ile Gln	
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gga gcc ctt aat gcc tca gaa	acc aca ccc aaa gaa	ctt cgg atc	3834
Gly Ala Leu Asn Ala Ser Glu	Thr Thr Pro Lys Glu	Leu Arg Ile	
1265	1270	1275	
aag aga caa aac tcc tca gat	agc atc tca agc ctc	aac agc atc	3879
Lys Arg Gln Asn Ser Ser Asp	Ser Ile Ser Ser Leu	Asn Ser Ile	
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act agc cat tcc agc atc ggc	agc agc aag gat gct	gat gcg aaa	3924
Thr Ser His Ser Ser Ile Gly	Ser Ser Lys Asp Ala	Asp Ala Lys	
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Lys Lys Lys Lys Lys Ser Trp	Leu Arg Ser Ser Phe	Asn Lys Ala	
1310	1315	1320	
ttc agt ata aaa aag ggg ccc	aag tca gct tcc tca	tac tcg gat	4014
Phe Ser Ile Lys Lys Gly Pro	Lys Ser Ala Ser Ser	Tyr Ser Asp	

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Lys Leu Gln His Gly Ser Thr	Glu Thr Ala Ser Pro	Ser Ile Lys	
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Ser Ser Thr Ser Ser Ser Val	Gly Thr Asp Val Thr	Glu Gly Pro	
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Ala His Pro Ala Pro His Thr	Arg Leu Phe His Ala	Asn Glu Glu	
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Glu Glu Pro Glu Lys Lys Glu	Val Ser Glu Leu Arg	Ser Glu Leu	
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tgg gag aag gaa atg aag ctt	aca gac atc cgc ttg	gag gcc ctc	4284
Trp Glu Lys Glu Met Lys Leu	Thr Asp Ile Arg Leu	Glu Ala Leu	
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aac tct gcc cac caa ctg gat	cag ctt cgg gag acc	atg cac aac	4329
Asn Ser Ala His Gln Leu Asp	Gln Leu Arg Glu Thr	Met His Asn	
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atg cag ttg gag gtg gac ctg	ctg gaa gca gag aat	gac cga ctg	4374
Met Gln Leu Glu Val Asp Leu	Leu Glu Ala Glu Asn	Asp Arg Leu	
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aag gta gcc cca ggc ccc tca	tca ggc tcc act cca	ggg cag gtc	4419
Lys Val Ala Pro Gly Pro Ser	Ser Gly Ser Thr Pro	Gly Gln Val	
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Pro Gly Ser Ser Ala Leu Ser	Ser Pro Arg Arg Ser	Leu Gly Leu	
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Ala Leu Thr His Ser Phe Gly	Pro Ser Leu Ala Asp	Thr Asp Leu	
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Ser Pro Met Asp Gly Ile Ser	Thr Cys Gly Pro Lys	Glu Glu Val	
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acc ctc cgg gtg gtg gtg agg	atg ccc ccg cag cac	atc atc aaa	4599
Thr Leu Arg Val Val Val Arg	Met Pro Pro Gln His	Ile Ile Lys	
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Gly Asp Leu Lys Gln Gln Glu	Phe Phe Leu Gly Cys	Ser Lys Val	
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agt gga aaa gtt gac tgg aag	atg ctg gat gaa gct	gtt ttc caa	4689
Ser Gly Lys Val Asp Trp Lys	Met Leu Asp Glu Ala	Val Phe Gln	
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Val Phe	Lys Asp Tyr Ile Ser	Lys Met Asp Pro Ala	Ser Thr Leu	
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Gly Leu	Ser Thr Glu Ser Ile	His Gly Tyr Ser Ile	Ser His Val	
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Lys Arg	Val Leu Asp Ala Glu	Pro Pro Glu Met Pro	Pro Cys Arg	
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cga ggt	gtc aat aac ata tca	gtc tcc ctc aaa ggt	ctg aag gag	4869
Arg Gly	Val Asn Asn Ile Ser	Val Ser Leu Lys Gly	Leu Lys Glu	
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aaa tgc	gtc gac agc ctg gtg	ttc gag acg ctg atc	ccc aag ccg	4914
Lys Cys	Val Asp Ser Leu Val	Phe Glu Thr Leu Ile	Pro Lys Pro	
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atg atg	cag cac tac ata agc	ctc ctg ctg aag cac	cgg cgc ctc	4959
Met Met	Gln His Tyr Ile Ser	Leu Leu Leu Lys His	Arg Arg Leu	
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Val Leu	Ser Gly Pro Ser Gly	Thr Gly Lys Thr Tyr	Leu Thr Asn	
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cgc ttg	gcc gag tac ctg gtg	gag cgc tct ggc cgt	gag gtc aca	5049
Arg Leu	Ala Glu Tyr Leu Val	Glu Arg Ser Gly Arg	Glu Val Thr	
1670	1675	1680		
gag ggc	atc gtc agc acc ttc	aac atg cac cag cag	tct tgc aag	5094
Glu Gly	Ile Val Ser Thr Phe	Asn Met His Gln Gln	Ser Cys Lys	
1685	1690	1695		
gat ctg	caa ctg tat ctt tcc	aac cta gcc aac cag	ata gac cgg	5139
Asp Leu	Gln Leu Tyr Leu Ser	Asn Leu Ala Asn Gln	Ile Asp Arg	
1700	1705	1710		
gaa aca	gga att ggg gat gtg	ccc ctg gtg att cta	ttg gat gac	5184
Glu Thr	Gly Ile Gly Asp Val	Pro Leu Val Ile Leu	Leu Asp Asp	
1715	1720	1725		
ctg agt	gaa gca ggc tcc atc	agt gag ttg gtc aat	ggg gcc ctc	5229
Leu Ser	Glu Ala Gly Ser Ile	Ser Glu Leu Val Asn	Gly Ala Leu	
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acc tgc	aag tat cat aaa tgt	ccc tat att ata ggt	acc acc aat	5274
Thr Cys	Lys Tyr His Lys Cys	Pro Tyr Ile Ile Gly	Thr Thr Asn	
1745	1750	1755		
cag cct	gta aaa atg aca ccc	aac cat ggc ttt cac	ttg agc ttc	5319
Gln Pro	Val Lys Met Thr Pro	Asn His Gly Phe His	Leu Ser Phe	
1760	1765	1770		
agg atg	ttg acc ttc tcc aac	aac gtg gag cca gcc	aat ggc ttc	5364
Arg Met	Leu Thr Phe Ser Asn	Asn Val Glu Pro Ala	Asn Gly Phe	
1775	1780	1785		

ctg gtt	cgt tac	ctg agg	agg	aag ctg	gta gag	tca	gac agc	gac	5409
Leu Val	Arg Tyr	Leu Arg	Arg	Lys Leu	Val Glu	Ser	Asp Ser	Asp	
1790			1795			1800			
atc aat	gcc aac	aag gaa	gag	ctg ctt	cgg gtg	ctc	gac tgg	gta	5454
Ile Asn	Ala Asn	Lys Glu	Glu	Leu Leu	Arg Val	Leu	Asp Trp	Val	
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ccc aag	ctg tgg	tat cat	ctc	cac acc	ttc ctt	gag	aag cac	agc	5499
Pro Lys	Leu Trp	Tyr His	Leu	His Thr	Phe Leu	Glu	Lys His	Ser	
1820			1825			1830			
acc tca	gac ttc	ctc atc	ggc	cct tgc	ttc ttt	ctg	tcg tgt	ccc	5544
Thr Ser	Asp Phe	Leu Ile	Gly	Pro Cys	Phe Phe	Leu	Ser Cys	Pro	
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att ggc	att gag	gac ttc	cgg	acc tgg	ttc att	gac	ctg tgg	aac	5589
Ile Gly	Ile Glu	Asp Phe	Arg	Thr Trp	Phe Ile	Asp	Leu Trp	Asn	
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aac tct	atc att	ccc tat	cta	cag gaa	gga gcc	aag	gat ggg	ata	5634
Asn Ser	Ile Ile	Pro Tyr	Leu	Gln Glu	Gly Ala	Lys	Asp Gly	Ile	
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Lys Val	His Gly	Gln Lys	Ala	Ala Trp	Glu Asp	Pro	Val Glu	Trp	
1880			1885			1890			
gtc cgg	gac aca	ctt ccc	tgg	cca tca	gcc caa	caa	gac caa	tca	5724
Val Arg	Asp Thr	Leu Pro	Trp	Pro Ser	Ala Gln	Gln	Asp Gln	Ser	
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Lys Leu	Tyr His	Leu Pro	Pro	Pro Thr	Val Gly	Pro	His Ser	Ile	
1910			1915			1920			
gcc tca	cct ccc	gag gat	agg	aca gtc	aaa gac	agc	acc cca	agt	5814
Ala Ser	Pro Pro	Glu Asp	Arg	Thr Val	Lys Asp	Ser	Thr Pro	Ser	
1925			1930			1935			
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Ser Leu	Asp Ser	Asp Pro	Leu	Met Ala	Met Leu	Leu	Lys Leu	Gln	
1940			1945			1950			
gaa gct	gcc aac	tac att	gag	tct cca	gat cga	gaa	acc atc	ctg	5904
Glu Ala	Ala Asn	Tyr Ile	Glu	Ser Pro	Asp Arg	Glu	Thr Ile	Leu	
1955			1960			1965			
gac ccc	aac ctt	cag gca	aca	ctt taagg	gttcg	gcaatcactg			5948
Asp Pro	Asn Leu	Gln Ala	Thr	Leu					
1970			1975						
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Leu Pro Arg Val Ser Phe Pro Cys Ala Leu Gly Leu Pro Leu Ser Leu  
 35 40 45

Leu Pro Arg Ser Leu Pro Leu Leu Ser Pro Ser Ser Ser Val Ser Ser  
 50 55 60

Val Leu Ser Leu Pro Leu Leu Leu Pro Arg Leu Leu Leu Arg Ser  
 65 70 75 80

Arg Pro Leu Pro Pro Pro Pro Val Pro Ala Asp Ala Arg Ile Val His  
 85 90 95

Ala Leu Leu Ala Gly Arg Met Leu Gly Ser Ser Val Lys Ser Val Gln  
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Pro Glu Val Glu Leu Ser Ser Gly Gly Gly Asp Glu Gly Ala Asp Glu  
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Pro Arg Gly Ala Gly Arg Lys Ala Ala Ala Ala Asp Gly Arg Gly Met  
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Leu Pro Lys Arg Ala Lys Ala Pro Gly Gly Gly Gly Gly Met Ala Lys  
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Arg Val Pro Gly Gly Pro Pro Ala Ser Asn Leu Arg Lys Gln Lys Ser  
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Leu Thr Asn Leu Ser Phe Leu Thr Asp Ser Glu Lys Lys Leu Gln Leu  
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Tyr Glu Pro Glu Trp Ser Asp Asp Met Ala Lys Ala Pro Lys Gly Leu  
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Gln Val Thr His Ser Ser Leu Glu Met Thr Cys Tyr Asp Ser Asp Asp  
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585

590

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Pro Pro Ser Leu Ala Asn Leu Asp Lys Val Asn Ser Asn Ser Leu Asp  
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Tyr Pro Lys Leu Ser Gly Leu His Arg Ser Met Glu Ser Leu Gln Met  
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Pro Met Ser Leu Pro Ser Ala Phe Pro Ser Ser Thr Pro Val Pro Thr  
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Pro Pro Ala Pro Pro Ala Ala Pro Thr Glu Glu Glu Thr Glu Glu  
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Gly Ser Gln Met Gly Ser Thr Leu Ser Leu Ala Glu Arg Pro Lys  
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His Gly Ser Val Leu Ser Leu Ala Ser Ser Ala Ser Ser Thr Tyr  
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1265 1270 1275

Lys Arg Gln Asn Ser Ser Asp Ser Ile Ser Ser Leu Asn Ser Ile  
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Arg Gly Val Asn Asn Ile Ser Val Ser Leu Lys Gly Leu Lys Glu				
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Lys Cys Val Asp Ser Leu Val Phe Glu Thr Leu Ile Pro Lys Pro				
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Met Met Gln His Tyr Ile Ser Leu Leu Leu Lys His Arg Arg Leu				
1640		1645		1650
Val Leu Ser Gly Pro Ser Gly Thr Gly Lys Thr Tyr Leu Thr Asn				
1655		1660		1665
Arg Leu Ala Glu Tyr Leu Val Glu Arg Ser Gly Arg Glu Val Thr				
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Glu Gly Ile Val Ser Thr Phe Asn Met His Gln Gln Ser Cys Lys				
1685		1690		1695
Asp Leu Gln Leu Tyr Leu Ser Asn Leu Ala Asn Gln Ile Asp Arg				
1700		1705		1710
Glu Thr Gly Ile Gly Asp Val Pro Leu Val Ile Leu Leu Asp Asp				
1715		1720		1725
Leu Ser Glu Ala Gly Ser Ile Ser Glu Leu Val Asn Gly Ala Leu				
1730		1735		1740
Thr Cys Lys Tyr His Lys Cys Pro Tyr Ile Ile Gly Thr Thr Asn				
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Gln Pro	Val Lys Met Thr	Pro Asn His Gly Phe His	Leu Ser Phe
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Arg Met	Leu Thr Phe Ser Asn	Asn Val Glu Pro Ala	Asn Gly Phe
1775		1780	1785
Leu Val	Arg Tyr Leu Arg Arg	Lys Leu Val Glu Ser	Asp Ser Asp
1790		1795	1800
Ile Asn	Ala Asn Lys Glu Glu	Leu Leu Arg Val Leu	Asp Trp Val
1805		1810	1815
Pro Lys	Leu Trp Tyr His Leu	His Thr Phe Leu Glu	Lys His Ser
1820		1825	1830
Thr Ser	Asp Phe Leu Ile Gly	Pro Cys Phe Phe Leu	Ser Cys Pro
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Ile Gly	Ile Glu Asp Phe Arg	Thr Trp Phe Ile Asp	Leu Trp Asn
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Asn Ser	Ile Ile Pro Tyr Leu	Gln Glu Gly Ala Lys	Asp Gly Ile
1865		1870	1875
Lys Val	His Gly Gln Lys Ala	Ala Trp Glu Asp Pro	Val Glu Trp
1880		1885	1890
Val Arg	Asp Thr Leu Pro Trp	Pro Ser Ala Gln Gln	Asp Gln Ser
1895		1900	1905
Lys Leu	Tyr His Leu Pro Pro	Pro Thr Val Gly Pro	His Ser Ile
1910		1915	1920
Ala Ser	Pro Pro Glu Asp Arg	Thr Val Lys Asp Ser	Thr Pro Ser
1925		1930	1935
Ser Leu	Asp Ser Asp Pro Leu	Met Ala Met Leu Leu	Lys Leu Gln
1940		1945	1950
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1970		1975	

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 Pro Ala Gly Glu Gly Leu Pro Leu Arg Lys Ser Gly Ser Val Glu Asn  
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 Gly Phe Asp Thr Gln Ile Tyr Thr Asp Trp Ala Asn His Tyr Leu Ala  
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 Lys Ser Gly His Lys Arg Leu Ile Arg Asp Leu Gln Gln Asp Val Thr  
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 Asp Gly Val Leu Leu Ala Gln Ile Ile Gln Val Val Ala Asn Glu Lys  
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 Ile Glu Asp Ile Asn Gly Cys Pro Lys Asn Arg Ser Gln Met Ile Glu  
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 Asn Ile Asp Ala Cys Leu Asn Phe Leu Ala Ala Lys Gly Ile Asn Ile  
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 Gln Gly Leu Ser Ala Glu Glu Ile Arg Asn Gly Asn Leu Lys Ala Ile  
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 Leu Gly Leu Phe Phe Ser Leu Ser Arg Tyr Lys Gln Gln Gln Gln Gln  
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 Pro Gln Lys Gln His Leu Ser Ser Pro Leu Pro Pro Ala Val Ser Gln  
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 Val Ala Gly Ala Pro Ser Gln Cys Gln Ala Gly Thr Pro Gln Gln Gln  
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 Val Pro Val Thr Pro Gln Ala Pro Cys Gln Pro His Gln Pro Ala Pro  
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cat cag cag tca aaa gca caa gct gaa atg cag tcc aga ctt cca ggt 625

His	Gln	Gln	Ser	Lys	Ala	Gln	Ala	Glu	Met	Gln	Ser	Arg	Leu	Pro	Gly		
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cct	acc	gcg	agg	gta	tcc	gct	gca	ggc	agc	gag	gcc	aaa	aca	cgc	gga	673	
Pro	Thr	Ala	Arg	Val	Ser	Ala	Ala	Gly	Ser	Glu	Ala	Lys	Thr	Arg	Gly		
	210					215					220						
ggg	tca	act	act	gct	aac	aac	cga	cgc	agc	cag	agc	ttt	aac	aac	tat	721	
Gly	Ser	Thr	Thr	Ala	Asn	Asn	Arg	Arg	Ser	Gln	Ser	Phe	Asn	Asn	Tyr		
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gat	aaa	tcc	aaa	cca	gtc	acc	tcc	cca	ccc	cca	ccg	cca	agc	agc	cac	769	
Asp	Lys	Ser	Lys	Pro	Val	Thr	Ser	Pro	Pro	Pro	Pro	Pro	Ser	Ser	His		
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Glu	Lys	Glu	Pro	Leu	Ala	Ser	Ser	Ala	Ser	Ser	His	Pro	Gly	Met	Ser		
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gac	aat	gca	cct	gct	tcc	ttg	gag	agc	ggc	agc	agc	tcc	acc	cct	act	865	
Asp	Asn	Ala	Pro	Ala	Ser	Leu	Glu	Ser	Gly	Ser	Ser	Ser	Thr	Pro	Thr		
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aat	tgc	agt	acc	tcc	tcg	gcc	atc	ccg	cag	ccc	ggt	gca	gcc	acc	aag	913	
Asn	Cys	Ser	Thr	Ser	Ser	Ala	Ile	Pro	Gln	Pro	Gly	Ala	Ala	Thr	Lys		
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cct	tgg	cgc	agc	aaa	tcc	ctc	agc	gtg	aag	cac	agt	gcc	acg	gta	tcc	961	
Pro	Trp	Arg	Ser	Lys	Ser	Leu	Ser	Val	Lys	His	Ser	Ala	Thr	Val	Ser		
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atg	ctc	tcg	gtc	aag	cct	cct	ggg	cct	gag	gcc	ccc	agg	ccc	aca	cct	1009	
Met	Leu	Ser	Val	Lys	Pro	Pro	Gly	Pro	Glu	Ala	Pro	Arg	Pro	Thr	Pro		
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gaa	gcc	atg	aag	ccg	gcc	ccc	aac	aat	cag	aag	tcc	atg	ctg	gaa	aag	1057	
Glu	Ala	Met	Lys	Pro	Ala	Pro	Asn	Asn	Gln	Lys	Ser	Met	Leu	Glu	Lys		
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ctg	aaa	ctt	ttc	aac	agt	aaa	ggg	ggc	tca	aag	gca	ggt	gag	ggg	ccg	1105	
Leu	Lys	Leu	Phe	Asn	Ser	Lys	Gly	Gly	Ser	Lys	Ala	Gly	Glu	Gly	Pro		
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ggg	tcc	cgg	gac	aca	agc	tgt	gag	cgg	ctg	gag	act	ctg	ccc	agc	ttc	1153	
Gly	Ser	Arg	Asp	Thr	Ser	Cys	Glu	Arg	Leu	Glu	Thr	Leu	Pro	Ser	Phe		
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gaa	gag	agc	gag	gag	ctg	gag	gcc	gcc	agt	cgc	atg	ctc	acc	acc	gtg	1201	
Glu	Glu	Ser	Glu	Glu	Leu	Glu	Ala	Ala	Ser	Arg	Met	Leu	Thr	Thr	Val		
	385				390					395					400		
ggc	cct	gct	tcc	agc	agc	ccc	aag	att	gca	ctc	aag	ggc	att	gcc	cag	1249	
Gly	Pro	Ala	Ser	Ser	Ser	Pro	Lys	Ile	Ala	Leu	Lys	Gly	Ile	Ala	Gln		
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agg	act	ttt	agc	cgg	gca	ctg	acc	aac	aag	aag	agt	tct	ctg	aaa	ggc	1297	
Arg	Thr	Phe	Ser	Arg	Ala	Leu	Thr	Asn	Lys	Lys	Ser	Ser	Leu	Lys	Gly		
			420					425					430				
aat	gag	aaa	gag	aag	gag	aaa	caa	cag	cgg	gag	aag	gat	aag	gag	aaa	1345	
Asn	Glu	Lys	Glu	Lys	Glu	Lys	Gln	Gln	Arg	Glu	Lys	Asp	Lys	Glu	Lys		

435

440

445

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gcg cct tcc aag gaa ggg gag cgg agc cgg agt ggg aag ctg agc tca Ala Pro Ser Lys Glu Gly Glu Arg Ser Arg Ser Gly Lys Leu Ser Ser 530 535 540	1633
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Pro	Val	Pro	Lys	Leu	Arg	Glu 1180	Pro	Ser	Lys	Thr	Ala 1185	Leu	Gly	Ser	
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gaa aaa tgc cag tca gag att cgc aag ctg cgg cgg gaa ctg gat Glu Lys Cys Gln Ser Glu Ile Arg Lys Leu Arg Arg Glu Leu Asp 1580 1585 1590			4780
gcc tcc cag gag aaa gtt tca gct ttg acc acc cag ctg aca gca Ala Ser Gln Glu Lys Val Ser Ala Leu Thr Thr Gln Leu Thr Ala 1595 1600 1605			4825
aat gct cac ctt gtg gct gcc ttt gaa cag agt ctt ggt aac atg Asn Ala His Leu Val Ala Ala Phe Glu Gln Ser Leu Gly Asn Met 1610 1615 1620			4870

aca atc Thr Ile 1625	agg ctc Arg Leu 1625	cag agt Gln Ser 1630	ctg Leu 1630	acc atg Thr Met 1635	aca gct Thr Ala 1635	gag Glu 1635	cag aag Gln Lys 1635	gat Asp 1635	4915
tca gaa Ser Glu 1640	ctg aat Leu Asn 1640	gag tta Glu Leu 1645	aga Arg 1645	aaa acc Lys Thr 1650	att gag Ile Glu 1650	ctg Leu 1650	cta aag Leu Lys 1650	aaa Lys 1650	4960
cag aac Gln Asn 1655	gca gct Ala Ala 1655	gcc cag Ala Gln 1660	gct Ala 1660	gcc att Ala Ile 1665	aat gga Asn Gly 1665	gta Val 1665	att aac Ile Asn 1665	aca Thr 1665	5005
cct gag Pro Glu 1670	ctc aac Leu Asn 1670	tgc aaa Cys Lys 1675	gga Gly 1675	aac ggc Asn Gly 1680	act gcc Thr Ala 1680	cag Gln 1680	tct gca Ser Ala 1680	gac Asp 1680	5050
ctc cgc Leu Arg 1685	atc cgc Ile Arg 1685	agg cag Arg Gln 1690	cac His 1690	tcc tca Ser Ser 1695	gac agc Asp Ser 1695	gtc Val 1695	tcc agc Ser Ser 1695	atc Ile 1695	5095
aac agt Asn Ser 1700	gcc acc Ala Thr 1700	agc cac Ser His 1705	tcc Ser 1705	agt gtg Ser Val 1710	ggc agc Gly Ser 1710	aac Asn 1710	ata gag Ile Glu 1710	agt Ser 1710	5140
gac tca Asp Ser 1715	aag aag Lys Lys 1715	aag aag Lys Lys 1720	agg Arg 1720	aag aac Lys Asn 1725	tgg gtc Trp Val 1725	aat Asn 1725	gag tta Glu Leu 1725	cgc Arg 1725	5185
agc tcc Ser Ser 1730	ttc aag Phe Lys 1730	caa gct Gln Ala 1735	ttc Phe 1735	ggg aag Gly Lys 1740	aag aag Lys Lys 1740	tcc Ser 1740	cca aaa Pro Lys 1740	tct Ser 1740	5230
gcg tcc Ala Ser 1745	tct cat Ser His 1745	tca gat Ser Asp 1750	att Ile 1750	gag gag Glu Glu 1755	atg acg Met Thr 1755	gat Asp 1755	tct tct Ser Ser 1755	ttg Leu 1755	5275
cct tcc Pro Ser 1760	tca cca Ser Pro 1760	aag tta Lys Leu 1765	cca Pro 1765	cac aat His Asn 1770	ggg tcc Gly Ser 1770	aca Thr 1770	ggt tcc Gly Ser 1770	acc Thr 1770	5320
cca ctg Pro Leu 1775	ctg agg Leu Arg 1775	aat tct Asn Ser 1780	cac His 1780	tcc aac Ser Asn 1785	tct cta Ser Leu 1785	att Ile 1785	tca gaa Ser Glu 1785	tgc Cys 1785	5365
atg gat Met Asp 1790	agt gaa Ser Glu 1790	gct gag Ala Glu 1795	acc Thr 1795	gtc atg Val Met 1800	cag ctc Gln Leu 1800	cga Arg 1800	aat gag Asn Glu 1800	tta Leu 1800	5410
aga gac Arg Asp 1805	aag gag Lys Glu 1805	atg aag Met Lys 1810	ctg Leu 1810	aca gat Thr Asp 1815	atc cgc Ile Arg 1815	tta Leu 1815	gaa gct Glu Ala 1815	ctc Leu 1815	5455
agt tct Ser Ser 1820	gcc cac Ala His 1820	cag ctg Gln Leu 1825	gac Asp 1825	cag ctc Gln Leu 1830	cgg gag Arg Glu 1830	gcc Ala 1830	atg aac Met Asn 1830	agg Arg 1830	5500
atg cag Met Gln 1835	agt gaa Ser Glu 1835	ata gag Ile Glu 1840	aag Lys 1840	ctg aaa Leu Lys 1845	gct gag Ala Glu 1845	aat Asn 1845	gat cgg Asp Arg 1845	ctg Leu 1845	5545

aag tca gag tct caa ggc agt ggc tgc agc cgg gct cct tcc caa	5590
Lys Ser Glu Ser Gln Gly Ser Gly Cys Ser Arg Ala Pro Ser Gln	
1850 1855 1860	
gtg tcc atc tct gcc tcc ccg agg cag tcc atg ggc ctc tcc cag	5635
Val Ser Ile Ser Ala Ser Pro Arg Gln Ser Met Gly Leu Ser Gln	
1865 1870 1875	
cac agc ttg aac ctc act gag tca acc agc ctg gac atg ttg ctg	5680
His Ser Leu Asn Leu Thr Glu Ser Thr Ser Leu Asp Met Leu Leu	
1880 1885 1890	
gat gac act ggt gaa tgc tcg gct cgg aag gaa gga ggc agg cat	5725
Asp Asp Thr Gly Glu Cys Ser Ala Arg Lys Glu Gly Gly Arg His	
1895 1900 1905	
gtt aag ata gtt gtc agc ttt cag gag gaa atg aag tgg aag gag	5770
Val Lys Ile Val Val Ser Phe Gln Glu Glu Met Lys Trp Lys Glu	
1910 1915 1920	
gat tcc aga cca cat ctc ttt ctt att ggc tgc att gga gtt agt	5815
Asp Ser Arg Pro His Leu Phe Leu Ile Gly Cys Ile Gly Val Ser	
1925 1930 1935	
ggc aag acg aag tgg gat gtg ctc gat ggg gtg gtt aga cgg ctg	5860
Gly Lys Thr Lys Trp Asp Val Leu Asp Gly Val Val Arg Arg Leu	
1940 1945 1950	
ttc aaa gaa tac atc att cat gtc gac cca gtg agt cag cta ggg	5905
Phe Lys Glu Tyr Ile Ile His Val Asp Pro Val Ser Gln Leu Gly	
1955 1960 1965	
ctg aat tca gac agc gtt ctt ggc tac agc att gga gaa atc aag	5950
Leu Asn Ser Asp Ser Val Leu Gly Tyr Ser Ile Gly Glu Ile Lys	
1970 1975 1980	
cgc agc aac act tcc gaa aca ccg gag ctg ctt cct tgt ggc tat	5995
Arg Ser Asn Thr Ser Glu Thr Pro Glu Leu Leu Pro Cys Gly Tyr	
1985 1990 1995	
ctg gtt gga gag aac acg acc atc tca gtg act gtg aaa ggg ctc	6040
Leu Val Gly Glu Asn Thr Thr Ile Ser Val Thr Val Lys Gly Leu	
2000 2005 2010	
gca gaa aac agc ctg gac tca ctg gtg ttt gag tcc ttg att ccc	6085
Ala Glu Asn Ser Leu Asp Ser Leu Val Phe Glu Ser Leu Ile Pro	
2015 2020 2025	
aag ccc atc ctg cag cgc tac gtc tcc ctc ctg ata gag cac cgt	6130
Lys Pro Ile Leu Gln Arg Tyr Val Ser Leu Leu Ile Glu His Arg	
2030 2035 2040	
cgg atc att ctc tct ggc ccc agc ggc act ggg aaa acc tac ctg	6175
Arg Ile Ile Leu Ser Gly Pro Ser Gly Thr Gly Lys Thr Tyr Leu	
2045 2050 2055	
gcc aac cgg ctg tct gag tat ata gtg ctt cga gag gga cgg gag	6220
Ala Asn Arg Leu Ser Glu Tyr Ile Val Leu Arg Glu Gly Arg Glu	
2060 2065 2070	
ttg aca gac ggg gtt atc gcc acc ttt aac gtg gac cat aag tcc	6265

Leu	Thr	Asp	Gly	Val	Ile	Ala	Thr	Phe	Asn	Val	Asp	His	Lys	Ser	
2075						2080					2085				
agc	aag	gaa	ttg	cgc	cag	tac	ctg	tcc	aac	ctt	gct	gac	cag	tgc	6310
Ser	Lys	Glu	Leu	Arg	Gln	Tyr	Leu	Ser	Asn	Leu	Ala	Asp	Gln	Cys	
2090						2095					2100				
aac	agt	gag	aac	aat	gct	gtg	gac	atg	ccc	ctc	gtc	atc	atc	ctg	6355
Asn	Ser	Glu	Asn	Asn	Ala	Val	Asp	Met	Pro	Leu	Val	Ile	Ile	Leu	
2105						2110					2115				
gac	aac	cta	cac	cac	gtg	agc	tct	ctg	ggc	gag	atc	ttc	aat	ggg	6400
Asp	Asn	Leu	His	His	Val	Ser	Ser	Leu	Gly	Glu	Ile	Phe	Asn	Gly	
2120						2125					2130				
ctg	ctc	aac	tgc	aag	tac	cac	aaa	tgc	cct	tac	ata	att	ggc	aca	6445
Leu	Leu	Asn	Cys	Lys	Tyr	His	Lys	Cys	Pro	Tyr	Ile	Ile	Gly	Thr	
2135						2140					2145				
atg	aac	cag	gct	acc	tct	tgc	act	ccc	aac	ctg	cag	ctt	cac	cat	6490
Met	Asn	Gln	Ala	Thr	Ser	Ser	Thr	Pro	Asn	Leu	Gln	Leu	His	His	
2150						2155					2160				
aac	ttc	aga	tgg	gtg	ctt	tgt	gcc	aac	cac	acg	gag	cct	gtg	aag	6535
Asn	Phe	Arg	Trp	Val	Leu	Cys	Ala	Asn	His	Thr	Glu	Pro	Val	Lys	
2165						2170					2175				
ggc	ttc	ctt	ggc	cga	ttc	ctg	agg	agg	aag	ctc	atg	gaa	aca	gag	6580
Gly	Phe	Leu	Gly	Arg	Phe	Leu	Arg	Arg	Lys	Leu	Met	Glu	Thr	Glu	
2180						2185					2190				
atc	agt	ggg	cgg	gtg	cgc	aat	atg	gag	ctg	gta	aaa	atc	att	gac	6625
Ile	Ser	Gly	Arg	Val	Arg	Asn	Met	Glu	Leu	Val	Lys	Ile	Ile	Asp	
2195						2200					2205				
tgg	att	ccc	aag	gtc	tgg	cat	cac	ctc	aac	cgc	ttc	ctg	gag	gct	6670
Trp	Ile	Pro	Lys	Val	Trp	His	His	Leu	Asn	Arg	Phe	Leu	Glu	Ala	
2210						2215					2220				
cac	agt	tcc	tgc	gac	gtc	acc	atc	ggc	ccc	cgg	ctc	ttc	ctg	tca	6715
His	Ser	Ser	Ser	Asp	Val	Thr	Ile	Gly	Pro	Arg	Leu	Phe	Leu	Ser	
2225						2230					2235				
tgc	ccc	atc	gat	gtg	gac	ggc	tgc	aga	gtg	tgg	ttc	acc	gac	ttg	6760
Cys	Pro	Ile	Asp	Val	Asp	Gly	Ser	Arg	Val	Trp	Phe	Thr	Asp	Leu	
2240						2245					2250				
tgg	aac	tat	tcc	att	atc	ccc	tat	ctc	ctg	gaa	gcc	gtc	aga	gaa	6805
Trp	Asn	Tyr	Ser	Ile	Ile	Pro	Tyr	Leu	Leu	Glu	Ala	Val	Arg	Glu	
2255						2260					2265				
gga	ctc	cag	ctc	tat	gga	agg	cgc	gcc	ccc	tgg	gag	gat	cct	gcc	6850
Gly	Leu	Gln	Leu	Tyr	Gly	Arg	Arg	Ala	Pro	Trp	Glu	Asp	Pro	Ala	
2270						2275					2280				
aag	tgg	gtg	atg	gac	aca	tat	cca	tgg	gca	gcc	agc	cca	caa	cag	6895
Lys	Trp	Val	Met	Asp	Thr	Tyr	Pro	Trp	Ala	Ala	Ser	Pro	Gln	Gln	
2285						2290					2295				
cac	gag	tgg	cct	ccc	ctg	ctg	cag	tta	cgg	cct	gag	gat	gtc	ggc	6940
His	Glu	Trp	Pro	Pro	Leu	Leu	Gln	Leu	Arg	Pro	Glu	Asp	Val	Gly	



35

40

45

Lys Ser Gly His Lys Arg Leu Ile Arg Asp Leu Gln Gln Asp Val Thr  
50 55 60

Asp Gly Val Leu Leu Ala Gln Ile Ile Gln Val Val Ala Asn Glu Lys  
65 70 75 80

Ile Glu Asp Ile Asn Gly Cys Pro Lys Asn Arg Ser Gln Met Ile Glu  
85 90 95

Asn Ile Asp Ala Cys Leu Asn Phe Leu Ala Ala Lys Gly Ile Asn Ile  
100 105 110

Gln Gly Leu Ser Ala Glu Glu Ile Arg Asn Gly Asn Leu Lys Ala Ile  
115 120 125

Leu Gly Leu Phe Phe Ser Leu Ser Arg Tyr Lys Gln Gln Gln Gln Gln  
130 135 140

Pro Gln Lys Gln His Leu Ser Ser Pro Leu Pro Pro Ala Val Ser Gln  
145 150 155 160

Val Ala Gly Ala Pro Ser Gln Cys Gln Ala Gly Thr Pro Gln Gln Gln  
165 170 175

Val Pro Val Thr Pro Gln Ala Pro Cys Gln Pro His Gln Pro Ala Pro  
180 185 190

His Gln Gln Ser Lys Ala Gln Ala Glu Met Gln Ser Arg Leu Pro Gly  
195 200 205

Pro Thr Ala Arg Val Ser Ala Ala Gly Ser Glu Ala Lys Thr Arg Gly  
210 215 220

Gly Ser Thr Thr Ala Asn Asn Arg Arg Ser Gln Ser Phe Asn Asn Tyr  
225 230 235 240

Asp Lys Ser Lys Pro Val Thr Ser Pro Pro Pro Pro Pro Ser Ser His  
245 250 255

Glu Lys Glu Pro Leu Ala Ser Ser Ala Ser Ser His Pro Gly Met Ser  
260 265 270

Asp Asn Ala Pro Ala Ser Leu Glu Ser Gly Ser Ser Ser Thr Pro Thr  
275 280 285

Asn Cys Ser Thr Ser Ser Ala Ile Pro Gln Pro Gly Ala Ala Thr Lys  
 290 295 300

Pro Trp Arg Ser Lys Ser Leu Ser Val Lys His Ser Ala Thr Val Ser  
 305 310 315 320

Met Leu Ser Val Lys Pro Pro Gly Pro Glu Ala Pro Arg Pro Thr Pro  
 325 330 335

Glu Ala Met Lys Pro Ala Pro Asn Asn Gln Lys Ser Met Leu Glu Lys  
 340 345 350

Leu Lys Leu Phe Asn Ser Lys Gly Gly Ser Lys Ala Gly Glu Gly Pro  
 355 360 365

Gly Ser Arg Asp Thr Ser Cys Glu Arg Leu Glu Thr Leu Pro Ser Phe  
 370 375 380

Glu Glu Ser Glu Glu Leu Glu Ala Ala Ser Arg Met Leu Thr Thr Val  
 385 390 395 400

Gly Pro Ala Ser Ser Ser Pro Lys Ile Ala Leu Lys Gly Ile Ala Gln  
 405 410 415

Arg Thr Phe Ser Arg Ala Leu Thr Asn Lys Lys Ser Ser Leu Lys Gly  
 420 425 430

Asn Glu Lys Glu Lys Glu Lys Gln Gln Arg Glu Lys Asp Lys Glu Lys  
 435 440 445

Ser Lys Asp Leu Ala Lys Arg Ala Ser Val Thr Glu Arg Leu Asp Leu  
 450 455 460

Lys Glu Glu Pro Lys Glu Asp Pro Ser Gly Ala Ala Val Pro Glu Met  
 465 470 475 480

Pro Lys Lys Ser Ser Lys Ile Ala Ser Phe Ile Pro Lys Gly Gly Lys  
 485 490 495

Leu Asn Ser Ala Lys Lys Glu Pro Met Ala Pro Ser His Ser Gly Ile  
 500 505 510

Pro Lys Pro Gly Met Lys Ser Met Pro Gly Lys Ser Pro Ser Ala Pro  
 515 520 525



Ala Pro Ser Lys Glu Gly Glu Arg Ser Arg Ser Gly Lys Leu Ser Ser  
530 535 540

Gly Leu Pro Gln Gln Lys Pro Gln Leu Asp Gly Arg His Ser Ser Ser  
545 550 555 560

Ser Ser Ser Leu Ala Ser Ser Glu Gly Lys Gly Pro Gly Gly Thr Thr  
565 570 575

Leu Asn His Ser Ile Ser Ser Gln Thr Val Ser Gly Ser Val Gly Thr  
580 585 590

Thr Gln Thr Thr Gly Ser Asn Thr Val Ser Val Gln Leu Pro Gln Pro  
595 600 605

Gln Gln Gln Tyr Asn His Pro Asn Thr Ala Thr Val Ala Pro Phe Leu  
610 615 620

Tyr Arg Ser Gln Thr Asp Thr Glu Gly Asn Val Thr Ala Glu Ser Ser  
625 630 635 640

Ser Thr Gly Val Ser Val Glu Pro Ser His Phe Thr Lys Thr Gly Gln  
645 650 655

Pro Ala Leu Glu Glu Leu Thr Gly Glu Asp Pro Glu Ala Arg Arg Leu  
660 665 670

Arg Thr Val Lys Asn Ile Ala Asp Leu Arg Gln Asn Leu Glu Glu Thr  
675 680 685

Met Ser Ser Leu Arg Gly Thr Gln Val Thr His Ser Thr Leu Glu Thr  
690 695 700

Thr Phe Asp Thr Asn Val Thr Thr Glu Met Ser Gly Arg Ser Ile Leu  
705 710 715 720

Ser Leu Thr Gly Arg Pro Thr Pro Leu Ser Trp Arg Leu Gly Gln Ser  
725 730 735

Ser Pro Arg Leu Gln Ala Gly Asp Ala Pro Ser Met Gly Asn Gly Tyr  
740 745 750

Pro Pro Arg Ala Asn Ala Ser Arg Phe Ile Asn Thr Glu Ser Gly Arg  
755 760 765

Tyr Val Tyr Ser Ala Pro Leu Arg Arg Gln Leu Ala Ser Arg Gly Ser  
770 775 780

Ser Val Cys His Val Asp Val Ser Asp Lys Ala Gly Asp Glu Met Asp  
785 790 795 800

Leu Glu Gly Ile Ser Met Asp Ala Pro Gly Tyr Met Ser Asp Gly Asp  
805 810 815

Val Leu Ser Lys Asn Ile Arg Thr Asp Asp Ile Thr Ser Gly Tyr Met  
820 825 830

Thr Asp Gly Gly Leu Gly Leu Tyr Thr Arg Arg Leu Asn Arg Leu Pro  
835 840 845

Asp Gly Met Ala Val Val Arg Glu Thr Leu Gln Arg Asn Thr Ser Leu  
850 855 860

Gly Leu Gly Asp Ala Asp Ser Trp Asp Asp Ser Ser Ser Val Ser Ser  
865 870 875 880

Gly Ile Ser Asp Thr Ile Asp Asn Leu Ser Thr Asp Asp Ile Asn Thr  
885 890 895

Ser Ser Ser Ile Ser Ser Tyr Ala Asn Thr Pro Ala Ser Ser Arg Lys  
900 905 910

Asn Leu Asp Val Gln Thr Asp Ala Glu Lys His Ser Gln Val Glu Arg  
915 920 925

Asn Ser Leu Trp Ser Gly Asp Asp Val Lys Lys Ser Asp Gly Gly Ser  
930 935 940

Asp Ser Gly Ile Lys Met Glu Pro Gly Ser Lys Trp Arg Arg Asn Pro  
945 950 955 960

Ser Asp Val Ser Asp Glu Ser Asp Lys Ser Thr Ser Gly Lys Lys Asn  
965 970 975

Pro Val Ile Ser Gln Thr Gly Ser Trp Arg Arg Gly Met Thr Ala Gln  
980 985 990

Val Gly Ile Thr Met Pro Arg Thr Lys Ala Ser Ala Pro Ala Gly Ala  
995 1000 1005

Leu Lys Thr Pro Gly Thr Gly Lys Thr Asp Asp Ala Lys Val Ser

1010		1015		1020
Glu Lys Gly Arg Leu Ser Pro Lys Ala Ser Gln Val Lys Arg Ser	1025	1030		1035
Pro Ser Asp Ala Gly Arg Ser Ser Gly Asp Glu Ser Lys Lys Pro	1040	1045		1050
Leu Pro Ser Ser Ser Arg Thr Pro Thr Ala Asn Ala Asn Ser Phe	1055	1060		1065
Gly Phe Lys Lys Gln Ser Gly Ser Ala Thr Gly Leu Ala Met Ile	1070	1075		1080
Thr Ala Ser Gly Val Thr Val Thr Ser Arg Ser Ala Thr Leu Gly	1085	1090		1095
Lys Ile Pro Lys Ser Ser Ala Leu Val Ser Arg Ser Ala Gly Arg	1100	1105		1110
Lys Ser Ser Met Asp Gly Ala Gln Asn Gln Asp Asp Gly Tyr Leu	1115	1120		1125
Ala Leu Ser Ser Arg Thr Asn Leu Gln Tyr Arg Ser Leu Pro Arg	1130	1135		1140
Pro Ser Lys Ser Asn Ser Arg Asn Gly Ala Gly Asn Arg Ser Ser	1145	1150		1155
Thr Ser Ser Ile Asp Ser Asn Ile Ser Ser Lys Ser Ala Gly Leu	1160	1165		1170
Pro Val Pro Lys Leu Arg Glu Pro Ser Lys Thr Ala Leu Gly Ser	1175	1180		1185
Ser Leu Pro Gly Leu Val Asn Gln Thr Asp Lys Glu Lys Gly Ile	1190	1195		1200
Ser Ser Asp Asn Glu Ser Val Ala Ser Cys Asn Ser Val Lys Val	1205	1210		1215
Asn Pro Ala Ala Gln Pro Val Ser Ser Pro Ala Gln Thr Ser Leu	1220	1225		1230
Gln Pro Gly Ala Lys Tyr Pro Asp Val Ala Ser Pro Thr Leu Arg	1235	1240		1245

Arg Leu Phe Gly Gly Lys Pro Thr Lys Gln Val Pro Ile Ala Thr  
1250 1255 1260

Ala Glu Asn Met Lys Asn Ser Val Val Ile Ser Asn Pro His Ala  
1265 1270 1275

Thr Met Thr Gln Gln Gly Asn Leu Asp Ser Pro Ser Gly Ser Gly  
1280 1285 1290

Val Leu Ser Ser Gly Ser Ser Ser Pro Leu Tyr Ser Lys Asn Val  
1295 1300 1305

Asp Leu Asn Gln Ser Pro Leu Ala Ser Ser Pro Ser Ser Ala His  
1310 1315 1320

Ser Ala Pro Ser Asn Ser Leu Thr Trp Gly Thr Asn Ala Ser Ser  
1325 1330 1335

Ser Ser Ala Val Ser Lys Asp Gly Leu Gly Phe Gln Ser Val Ser  
1340 1345 1350

Ser Leu His Thr Ser Cys Glu Ser Ile Asp Ile Ser Leu Ser Ser  
1355 1360 1365

Gly Gly Val Pro Ser His Asn Ser Ser Thr Gly Leu Ile Ala Ser  
1370 1375 1380

Ser Lys Asp Asp Ser Leu Thr Pro Phe Val Arg Thr Asn Ser Val  
1385 1390 1395

Lys Thr Thr Leu Ser Glu Ser Pro Leu Ser Ser Pro Ala Ala Ser  
1400 1405 1410

Pro Lys Phe Cys Arg Ser Thr Leu Pro Arg Lys Gln Asp Ser Asp  
1415 1420 1425

Pro His Leu Asp Arg Asn Thr Leu Pro Lys Lys Gly Leu Arg Tyr  
1430 1435 1440

Thr Pro Thr Ser Gln Leu Arg Thr Gln Glu Asp Ala Lys Glu Trp  
1445 1450 1455

Leu Arg Ser His Ser Ala Gly Gly Leu Gln Asp Thr Ala Ala Asn  
1460 1465 1470

Ser Pro Phe Ser Ser Gly Ser Ser Val Thr Ser Pro Ser Gly Thr  
1475 1480 1485

Arg Phe Asn Phe Ser Gln Leu Ala Ser Pro Thr Thr Val Thr Gln  
1490 1495 1500

Met Ser Leu Ser Asn Pro Thr Met Leu Arg Thr His Ser Leu Ser  
1505 1510 1515

Asn Ala Asp Gly Gln Tyr Asp Pro Tyr Thr Asp Ser Arg Phe Arg  
1520 1525 1530

Asn Ser Ser Met Ser Leu Asp Glu Lys Ser Arg Thr Met Ser Arg  
1535 1540 1545

Ser Gly Ser Phe Arg Asp Gly Phe Glu Glu Val His Gly Ser Ser  
1550 1555 1560

Leu Ser Leu Val Ser Ser Thr Ser Ser Val Tyr Ser Thr Pro Glu  
1565 1570 1575

Glu Lys Cys Gln Ser Glu Ile Arg Lys Leu Arg Arg Glu Leu Asp  
1580 1585 1590

Ala Ser Gln Glu Lys Val Ser Ala Leu Thr Thr Gln Leu Thr Ala  
1595 1600 1605

Asn Ala His Leu Val Ala Ala Phe Glu Gln Ser Leu Gly Asn Met  
1610 1615 1620

Thr Ile Arg Leu Gln Ser Leu Thr Met Thr Ala Glu Gln Lys Asp  
1625 1630 1635

Ser Glu Leu Asn Glu Leu Arg Lys Thr Ile Glu Leu Leu Lys Lys  
1640 1645 1650

Gln Asn Ala Ala Ala Gln Ala Ala Ile Asn Gly Val Ile Asn Thr  
1655 1660 1665

Pro Glu Leu Asn Cys Lys Gly Asn Gly Thr Ala Gln Ser Ala Asp  
1670 1675 1680

Leu Arg Ile Arg Arg Gln His Ser Ser Asp Ser Val Ser Ser Ile  
1685 1690 1695

Asn Ser Ala Thr Ser His Ser Ser Val Gly Ser Asn Ile Glu Ser  
1700 1705 1710

Asp Ser Lys Lys Lys Lys Arg Lys Asn Trp Val Asn Glu Leu Arg  
1715 1720 1725

Ser Ser Phe Lys Gln Ala Phe Gly Lys Lys Lys Ser Pro Lys Ser  
1730 1735 1740

Ala Ser Ser His Ser Asp Ile Glu Glu Met Thr Asp Ser Ser Leu  
1745 1750 1755

Pro Ser Ser Pro Lys Leu Pro His Asn Gly Ser Thr Gly Ser Thr  
1760 1765 1770

Pro Leu Leu Arg Asn Ser His Ser Asn Ser Leu Ile Ser Glu Cys  
1775 1780 1785

Met Asp Ser Glu Ala Glu Thr Val Met Gln Leu Arg Asn Glu Leu  
1790 1795 1800

Arg Asp Lys Glu Met Lys Leu Thr Asp Ile Arg Leu Glu Ala Leu  
1805 1810 1815

Ser Ser Ala His Gln Leu Asp Gln Leu Arg Glu Ala Met Asn Arg  
1820 1825 1830

Met Gln Ser Glu Ile Glu Lys Leu Lys Ala Glu Asn Asp Arg Leu  
1835 1840 1845

Lys Ser Glu Ser Gln Gly Ser Gly Cys Ser Arg Ala Pro Ser Gln  
1850 1855 1860

Val Ser Ile Ser Ala Ser Pro Arg Gln Ser Met Gly Leu Ser Gln  
1865 1870 1875

His Ser Leu Asn Leu Thr Glu Ser Thr Ser Leu Asp Met Leu Leu  
1880 1885 1890

Asp Asp Thr Gly Glu Cys Ser Ala Arg Lys Glu Gly Gly Arg His  
1895 1900 1905

Val Lys Ile Val Val Ser Phe Gln Glu Glu Met Lys Trp Lys Glu  
1910 1915 1920

Asp Ser Arg Pro His Leu Phe Leu Ile Gly Cys Ile Gly Val Ser

1925

1930

1935

Gly Lys Thr Lys Trp Asp Val Leu Asp Gly Val Val Arg Arg Leu  
 1940 1945 1950

Phe Lys Glu Tyr Ile Ile His Val Asp Pro Val Ser Gln Leu Gly  
 1955 1960 1965

Leu Asn Ser Asp Ser Val Leu Gly Tyr Ser Ile Gly Glu Ile Lys  
 1970 1975 1980

Arg Ser Asn Thr Ser Glu Thr Pro Glu Leu Leu Pro Cys Gly Tyr  
 1985 1990 1995

Leu Val Gly Glu Asn Thr Thr Ile Ser Val Thr Val Lys Gly Leu  
 2000 2005 2010

Ala Glu Asn Ser Leu Asp Ser Leu Val Phe Glu Ser Leu Ile Pro  
 2015 2020 2025

Lys Pro Ile Leu Gln Arg Tyr Val Ser Leu Leu Ile Glu His Arg  
 2030 2035 2040

Arg Ile Ile Leu Ser Gly Pro Ser Gly Thr Gly Lys Thr Tyr Leu  
 2045 2050 2055

Ala Asn Arg Leu Ser Glu Tyr Ile Val Leu Arg Glu Gly Arg Glu  
 2060 2065 2070

Leu Thr Asp Gly Val Ile Ala Thr Phe Asn Val Asp His Lys Ser  
 2075 2080 2085

Ser Lys Glu Leu Arg Gln Tyr Leu Ser Asn Leu Ala Asp Gln Cys  
 2090 2095 2100

Asn Ser Glu Asn Asn Ala Val Asp Met Pro Leu Val Ile Ile Leu  
 2105 2110 2115

Asp Asn Leu His His Val Ser Ser Leu Gly Glu Ile Phe Asn Gly  
 2120 2125 2130

Leu Leu Asn Cys Lys Tyr His Lys Cys Pro Tyr Ile Ile Gly Thr  
 2135 2140 2145

Met Asn Gln Ala Thr Ser Ser Thr Pro Asn Leu Gln Leu His His  
 2150 2155 2160

Asn Phe Arg Trp Val Leu Cys Ala Asn His Thr Glu Pro Val Lys  
2165 2170 2175

Gly Phe Leu Gly Arg Phe Leu Arg Arg Lys Leu Met Glu Thr Glu  
2180 2185 2190

Ile Ser Gly Arg Val Arg Asn Met Glu Leu Val Lys Ile Ile Asp  
2195 2200 2205

Trp Ile Pro Lys Val Trp His His Leu Asn Arg Phe Leu Glu Ala  
2210 2215 2220

His Ser Ser Ser Asp Val Thr Ile Gly Pro Arg Leu Phe Leu Ser  
2225 2230 2235

Cys Pro Ile Asp Val Asp Gly Ser Arg Val Trp Phe Thr Asp Leu  
2240 2245 2250

Trp Asn Tyr Ser Ile Ile Pro Tyr Leu Leu Glu Ala Val Arg Glu  
2255 2260 2265

Gly Leu Gln Leu Tyr Gly Arg Arg Ala Pro Trp Glu Asp Pro Ala  
2270 2275 2280

Lys Trp Val Met Asp Thr Tyr Pro Trp Ala Ala Ser Pro Gln Gln  
2285 2290 2295

His Glu Trp Pro Pro Leu Leu Gln Leu Arg Pro Glu Asp Val Gly  
2300 2305 2310

Phe Asp Gly Tyr Ser Met Pro Arg Glu Gly Ser Thr Ser Lys Gln  
2315 2320 2325

Met Pro Pro Ser Asp Ala Glu Gly Asp Pro Leu Met Asn Met Leu  
2330 2335 2340

Met Arg Leu Gln Glu Ala Ala Asn Tyr Ser Ser Pro Gln Ser Tyr  
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Asp Ser Asp Ser Asn Ser Asn Ser His His Asp Asp Ile Leu Asp  
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Ser Ser Leu Glu Ser Thr Leu  
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Cys Thr Cys Gly Thr His Ser Glu  
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aat cat tac cta gcc aaa tcc ggc cac aag cgt ctc atc aag gat ctc 96  
Asn His Tyr Leu Ala Lys Ser Gly His Lys Arg Leu Ile Lys Asp Leu  
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cag caa gat gtg aca gat ggc gtc ctc ctg gcc cag att atc cag gtt 144

Gln Gln Asp Val Thr Asp Gly Val Leu Leu Ala Gln Ile Ile Gln Val  
 35 40 45

gtg gca aat gaa aag att gaa gac atc aat ggc tgt ccg aag aac aga 192  
 Val Ala Asn Glu Lys Ile Glu Asp Ile Asn Gly Cys Pro Lys Asn Arg  
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tcc caa atg att gaa aac ata gat gcc tgc ttg aat ttc ctg gca gct 240  
 Ser Gln Met Ile Glu Asn Ile Asp Ala Cys Leu Asn Phe Leu Ala Ala  
 65 70 75 80

aag gga ata aac atc cag ggg ctg tct gca gaa gag atc agg aat gga 288  
 Lys Gly Ile Asn Ile Gln Gly Leu Ser Ala Glu Glu Ile Arg Asn Gly  
 85 90 95

aac ctc aag gcc att cta ggc ctc ttc ttc agc ctc tcc cga tac aag 336  
 Asn Leu Lys Ala Ile Leu Gly Leu Phe Phe Ser Leu Ser Arg Tyr Lys  
 100 105 110

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 Gln Gln Gln Gln Gln Pro Gln Lys Gln His Leu Ser Ser Pro Leu Pro  
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 Pro Ala Val Ser Gln Val Ala Gly Ala Pro Ser Gln Cys Gln Ala Gly  
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acc cct cag cag cag gtg cca gtc act ccc caa gcc ccg tgc cag cct 480  
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 His Gln Pro

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Val Ala Asn Glu Lys Ile Glu Asp Ile Asn Gly Cys Pro Lys Asn Arg  
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Ser Gln Met Ile Glu Asn Ile Asp Ala Cys Leu Asn Phe Leu Ala Ala  
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Lys Gly Ile Asn Ile Gln Gly Leu Ser Ala Glu Glu Ile Arg Asn Gly  
85 90 95

Asn Leu Lys Ala Ile Leu Gly Leu Phe Phe Ser Leu Ser Arg Tyr Lys  
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Gln Gln Gln Gln Gln Pro Gln Lys Gln His Leu Ser Ser Pro Leu Pro  
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Pro Ala Val Ser Gln Val Ala Gly Ala Pro Ser Gln Cys Gln Ala Gly  
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His Gln Pro

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 Phe Glu Glu Val His Gly Ser Ser Leu Ser Leu Val Ser Ser Thr Ser  
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 Ser Ile Tyr Ser Thr Pro Glu Glu Lys Cys Gln Ser Glu Ile Arg Lys  
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 Leu Arg Arg Glu Leu Asp Ala Ser Gln Glu Lys Val Ser Ala Leu Thr  
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 Thr Gln Leu Thr Ala Asn Ala His Leu Val Ala Ala Phe Glu Gln Ser  
 65 70 75  
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 Leu Gly Asn Met Thr Ile Arg Leu Gln Ser Leu Thr Met Thr Ala Glu  
 80 85 90 95  
 cag aag gat tca gaa ctg aac gag tta aga aaa acc atc gag ctg ctg 335  
 Gln Lys Asp Ser Glu Leu Asn Glu Leu Arg Lys Thr Ile Glu Leu Leu  
 100 105 110  
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 Lys Lys Gln Asn Ala Ala Ala Gln Ala Ala Ile Asn Gly Val Ile Asn  
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 Thr Pro Glu Leu Asn Cys Lys Gly Asn Gly Ser Ala Arg Leu Gln Thr  
 130 135 140  
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<400> 36

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35 40 45

Arg Arg Glu Leu Asp Ala Ser Gln Glu Lys Val Ser Ala Leu Thr Thr  
50 55 60

Gln Leu Thr Ala Asn Ala His Leu Val Ala Ala Phe Glu Gln Ser Leu  
65 70 75 80

Gly Asn Met Thr Ile Arg Leu Gln Ser Leu Thr Met Thr Ala Glu Gln  
85 90 95

Lys Asp Ser Glu Leu Asn Glu Leu Arg Lys Thr Ile Glu Leu Leu Lys  
100 105 110

Lys Gln Asn Ala Ala Ala Gln Ala Ala Ile Asn Gly Val Ile Asn Thr  
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Pro Glu Leu Asn Cys Lys Gly Asn Gly Ser Ala Arg Leu Gln Thr Tyr  
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